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DEC delivers WAN tools, T-1 blueprint

By John Cox
Senior Editor

DALLAS — Digital Equipment Corp. last week announced new and enhanced wide-area networking products and a marketing agreement with StrataCom, Inc. that calls for DEC to recommend StrataCom's T-1 multiplexers to its customers.

DEC's product announcements expand DECnet connectivity options for IBM Systems Network Architecture and X.25 networks. The new products include a terminal server that gives IBM 3270 terminal users access to VAX applications, a new low-end gateway to SNA nets and enhanced software for linking DEC VAXes to SNA nets.

DEC also unwrapped new routers, router software and a high-end multiplexer/server for linking remote devices to DECnet networks.

As expected, DEC said it will push StrataCom's T-1 multiplexers to DEC customers that require T-1 support.

DEC will jointly market StrataCom Internetwork Packet Exchange FastPacket Bandwidth Management Systems and offer service and support for them un-

(continued on page 7)

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ICA President-Elect Roy Bruce (left) and American Airlines Chairman Robert Crandall speak at the ICA show. See stories inside.

Users, carriers split over progress since Hinsdale

Carriers claim they have taken steps to prevent future telecom disasters; users remain skeptical.

By Bob Brown and Gail Runnoe
Network World Staff

HINSDALE, Ill. — Local and long-distance carriers say they have taken steps to protect their networks from disaster in the year since the now infamous Hinsdale central office fire, but users and consultants say they are skeptical of these claims.

A year ago today, a fire at an Illinois Bell Telephone Co. hub central office here knocked out service for more than 500,000 users in Chicago's southwestern suburbs for as long as two weeks. A state-sponsored report concluded that the blaze was "perhaps the most serious in the history of the telephone industry."

Carriers say they have responded to disaster recovery concerns raised in the wake of the fire by training employees to handle emergencies better, improving cabling designs in switching centers and working to familiarize local fire departments with central office layouts and equipment.

They also say they are planning to make changes to their network architectures to improve alternate routing and redundancy. But, for the most part, those plans are still on the drawing board, they say.

Users and consultants credit

(continued on page 49)

IBM overhauls 3174, broadens 3745 line

Company announces nine 3174 next-generation controllers, three low-end and mid-range 3745s.

By Paul Desmond
Staff Writer

DALLAS — IBM last week announced a new generation of 3174 cluster controllers and added low-end and mid-range models to its family of 3745 front-end processors.

The products, announced at the International Communications Association's 42nd Annual Conference and Exposition here, add needed horsepower and host connectivity options to the 3174, and give depth to the company's mainstream front-end processor line, analysts said.

IBM unveils CallPath to offer ISDN-like services, page 4.

The 3174 announcements include nine new controllers, each of which replaces a current-generation model. The controllers have twice the memory of the old 3174s and, for the first time, can be directly attached to multiple System/370 processors.

Front-end processor announcements included three lower level models of the IBM 3745 Communication Controller and enhancements for the existing 3745 Models 210 and 410.

The enhanced models support fractional T-1 services and as many as 896 low-speed lines,

(continued on page 55)

INSIDE

User reaction mixed over ICA's ISDN demo, page 2.

NETLINE

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STORMY SKIES failed to dampen the spirits of this year's ICA conference goers. Page 2.

US SPRINT GOES ABROAD with its international private-line and VPN services. Page 4.

BOLSTERED BY BACKING from IBM, XTP takes its first step toward becoming an ANSI protocol standard. Page 4.

NORTHERN TELECOM ADDS a net management system for Meridian Customer Defined Networks. Page 6.

MCI TRIUMPHS OVER rivals in a tough battle for Westinghouse's multimillion-dollar voice/data contract. Page 7.

NETWORKING IN JAPAN — pointers that U.S. network managers need. Page 26.

SWITCHES AND MODEMS are the rage in Telenet's effort to boost performance. Page 51.

NEWSPAPER

FEATURE

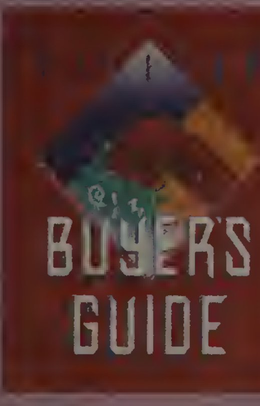
▲▲▲

Technology lowers cost of quality video links

Ranjana Sharma
Special to Network World

Videoconferencing, formerly considered an expensive frill, is developing into an essential communications tool for organizations that want to improve productivity and save time and money on travel.

Improved compression techniques are allowing better picture quality at lower bandwidths. Video signals can now be compressed down to between 56K bit/sec and T-1 speeds. Systems that formerly required satellite or microwave facilities to handle bandwidth of 3M bit/sec or more are now able to take advantage of widely available digital transmission options such as T-1 and digital data services.



Also, the prices of videoconferencing systems have come down, making long-distance meetings a cost-effective way

(continued on page 29)

MCI adopts two-pronged ISDN strategy

By Anita Taff
Washington Bureau Chief

DALLAS — MCI Communications Corp. last week said it will offer a set of ISDN-like services provided over users' current facilities by the end of the year and will introduce true ISDN services in the first quarter of 1990.

MCI's strategy — detailed at the International Communications Association's 42nd Annual Conference and Exposition here — is designed to lure customers to Integrated Services Digital Network-like services and then to later roll out standard ISDN offerings.

MCI said it will utilize its digital switches and Common Channel Signaling System 7 to support its ISDN-equivalent services on a nationwide basis. The capabilities will be supported through in-

(continued on page 50)

Users give mixed marks to ICA's ISDN extravaganza

Attendees throng the largest ever application demo for a chance to see technology in action.

By Wayne Eckerson
Staff Writer

DALLAS — The largest ever demonstration of Integrated Services Digital Network applications drew crowds here last week but received mixed reviews from the users who came to see the technology in action.

The ISDN Showcase at the International Communications Association's 42nd Annual Conference and Exposition gave users an opportunity to examine 60 ISDN applications demonstrated by 42 vendors. The showcase, held in a large room off the main exhibition hall here, was intended to spur user interest in the integrated voice/data technology and to dispel the notion that there are few practical applications of ISDN.

Vendors gave users a chance to work with applications such as personal computer-to-personal computer file transfer, two-way videoconferencing, Group IV facsimile and automatic number identification (ANI).

While users were impressed by the vendor commitment to ISDN, most said the applications demonstrated — with a few exceptions — could be supported with existing technologies.

"I think vendors forced many of the applications just to show some practical use of ISDN. I've used twisted-pair wire and baluns to do some of the same things I saw demonstrated," said Gary Henkel, director of telecommunications at Time Customer Service, Inc. in Tampa, Fla.

Kenneth LaClair, manager of communications services for Insurance Value Added Network Services (IVANS), asked, "What does ISDN provide that I can't already do with existing facilities?" IVANS is a Greenwich, Conn.-based nonprofit organization that provides communications support to more than 100 major insurance companies.

Unsolved mystery

Most users agreed that ISDN will eventually mature into an important technology, but they said they are content to wait on the sidelines and watch others experiment with it.

LaClair saw the ISDN demonstration as a learning opportunity, but he said he had as many questions when he left as when he came.

Patrick Hennelly, manager of telecommunications operations

(continued on page 49)

ICA highlights technologies and issues reshaping nets

Net management, global networks in spotlight.

By Barton Crockett
Senior Editor

DALLAS — Against a backdrop of stormy, lightning-punctuated skies, some 18,000 people crowded the Dallas Convention Center for the International Communications Association's (ICA) 42nd Annual Conference and Exposition here last week.

Texas-sized thunderstorms rocked the Dallas area during much of the four-day event, disrupting telephone service and prompting tornado warnings. But attendees, including nearly 2,000 ICA members, kept dry in the convention center, visiting exhibitor booths and seminars to learn about the technologies and trends that are reshaping user networks.

Emerging technologies dominated the exhibit floor and session schedule. The show's centerpiece, a 15,000-sq.-ft. Integrated Services Digital Network demonstration, drew throngs of conferees curious to witness what the ICA called "the most comprehensive display of ISDN applications ever" (see story, this page). Seminars on other key issues, such as international networking, were well attended.

ICA President William Pomeroy praised growing user interest in the convergence of voice and data technologies and said the 1989 conference marks a coming of age for the association.

"We're no longer just telecommunications or data processing people," Pomeroy told ICA members in his opening remarks. "We're information technology professionals."

In ISDN, as in life

Illustrating ICA members' increasing interest in voice and data convergence, the conference focused heavily on ISDN. In addition to the mammoth ISDN demonstration, a number of vendors announced ISDN products. MCI Communications Corp. announced a series of what it called ISDN-equivalent services — services that support ISDN-type capabilities over current user facilities — and plans for true ISDN services (see story, page 1).

(continued on page 50)

Briefs

US Sprint plans rate cuts. US Sprint Communications Co. last week said it will cut rates for its WATS, 800 and Virtual Private Network (VPN) services by as much as 10% starting in June.

US Sprint will slash an average of 5% from its WATS and 800 services, with the cost of Dial 1 WATS being reduced the most, 5.9%. Monthly service charges for UltraWATS and Ultra 800 will also be reduced from $495 to $50 per month. The carrier said it will lop from 7% to 10% off VPN services. US Sprint also said it will offer volume discounts of up to 15% on Network WATS and VPN services, and will waive long-term fixed contracts with termination penalties.

Southwestern Bell readies for ISDN. Southwestern Bell Telephone Co. announced at last week's International Communications Association's 42nd Annual Conference and Exposition a number of Integrated Services Digital Network tests scheduled for the early 1990s, as well as three new ISDN customers.

Southwestern Bell will team with BellSouth Corp. to test an interregional ISDN hookup in the first quarter of 1991. Southwestern Bell also plans to test inter-local access and transport area ISDN access via Signaling System 7 with MCI Communications Corp. and possibly with US Sprint Communications Co. The MCI test is scheduled for the fourth quarter of 1990. Southwestern Bell also announced three new ISDN users: Kerr-McGee Corp. of Oklahoma City; Valero Energy Corp. of San Antonio, Texas; and Texas Medical Center Complex of Houston.

Congress ponders telecom policy. Members of the House Subcommittee on Telecommunications and Finance agreed last week that Congress should take an active role in determining U.S. telecommunications policy. Members disagreed, however, on how prominent a role it should have.

Cautioning colleagues against hastily wresting oversight of the Modified Final Judgment from U.S. District Court Judge Harold Greene, Rep. Michael Synar (D-Okla.) said, "Turning the MFJ over to Congress probably means turning it over to the FCC."

William Esrey, president of US Sprint Communications Co., advised Congress not to adopt any legislation loosening Modified Final Judgment restrictions on regional Bell holding companies as long as they can use their "bottleneck controls" over local connections to impede competition.

AT&T files Tariff 12 revisions. Late last week AT&T filed revised versions of its five commercial Tariff 12 network deals. As directed by the FCC, AT&T incorporated language into each of the offers — for General Electric Co., E.I. Dupont de Nemours & Co., Ford Motor Co., American Airlines, Inc. and American Express Co. — explicitly stating that similar Tariff 12 offerings are generally available to other customers.

AT&T also made specific changes to the Tariff 12 deals, including discontinuance of liability regulations and revision of charges for some deals. The FCC last month ruled that Tariff 12 offers were unlawful due to provisions that restricted users from getting similar network deals.

CONTENTS

Industry Update
T-1 multiplexer maker Infotron Systems last week agreed to buy Licom, a manufacturer of T-3 multiplexers, in an effort to strengthen its position in the emerging T-3 market. **Page 9**

Telecommunications
Although some big businesses are moving more of their voice traffic to virtual private nets, analysts say the overall migration to these services is proceeding at a glacial pace. **Page 11**

Data Communications
IBM's Common Programming Interface-Communications is emerging as important not only in IBM's strategies, but also for third parties seeking to tie non-IBM processors into SNA nets. **Page 15**

Local Networking
Baytec recently announced a computer net that uses the small computer systems interface to transfer data among dissimilar micros at rates as high as 200M bit/sec. **Page 17**

Management Strategies
Senior information systems executives are devoting more attention to the development of net architectures that can help firms fulfill their business objectives. **Page 19**

Products & Services
Digital Communications Associates recently unveiled a version of its Irma terminal-emulation board that is compatible with the existing Industry Standard Architecture bus in IBM Personal Computers as well as with IBM's new Micro Channel bus. **Page 21**

Inside

Opinions 24
Letters 25
Networking Marketplace 35
Networking Careers 36

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Network World
Box 9171, 375 Cochituate Road
Framingham, Mass. 01701-9171
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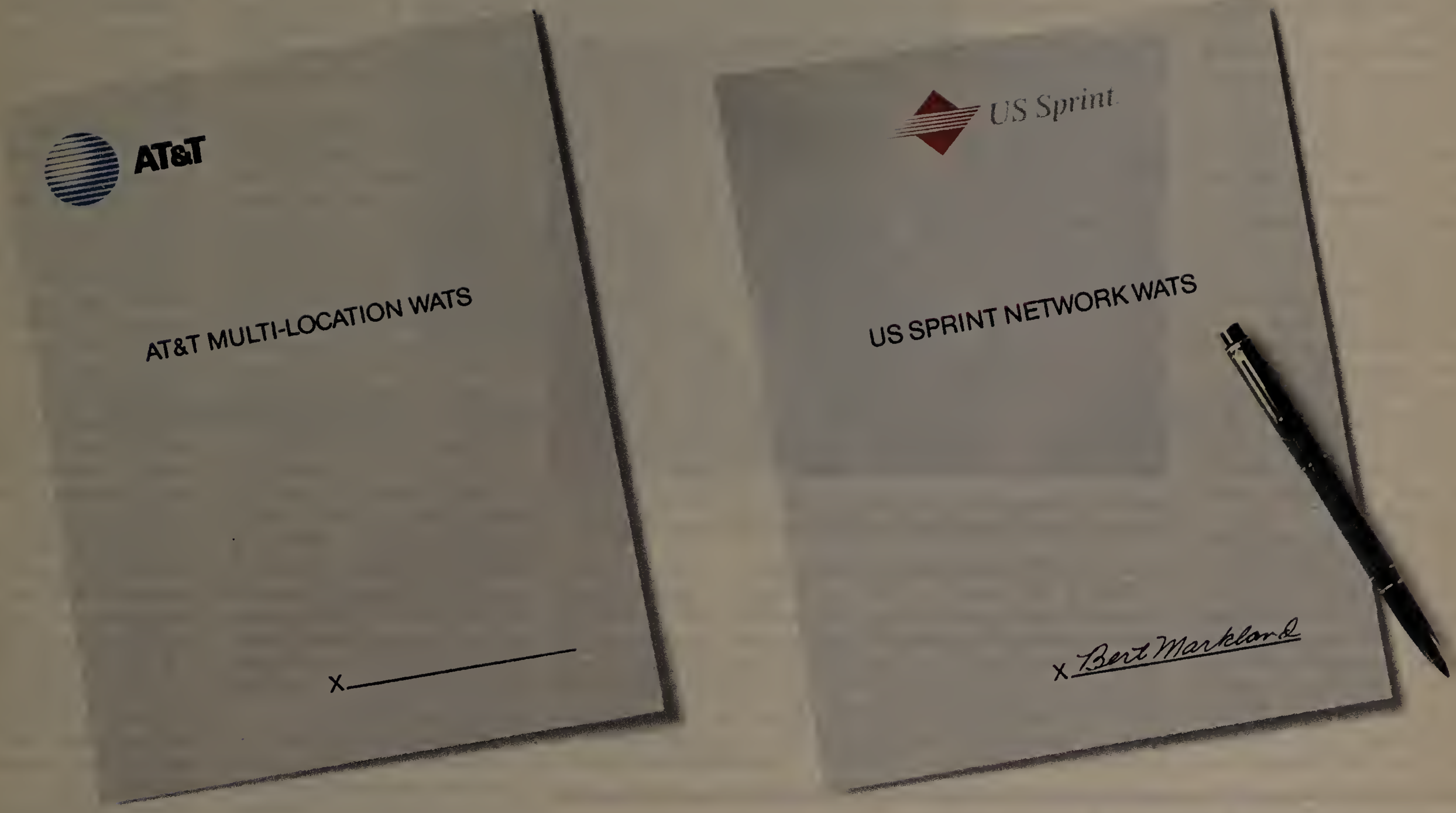

Phone WATS FŌN WATS

Guess Which One Makes Savings Sound Even Better?

Savings isn't the only reason companies are picking US Sprint's Network WATS^{SM} over AT&T's Multi-Location WATS.

With Sprint, every call travels on the nation's first and only 100% digital Fiber Optic Network (FŌN^{SM}) —the network whose sound quality is preferred by 9 out of 10 people over AT&T.

Network WATS also gives you the option of having branch offices billed individually or getting one consolidated company-wide invoice every month. And gives you a single management report that summarizes all outbound calls from all locations. AT&T doesn't.

And Sprint gives you all this savings and flexibility with no strings attached. To get any savings at all with AT&T, you have to sign a one-year contract.

But how much do you actually save with Sprint? Our rates are up to 13% less than AT&T's, including a 5% discount on all Dial 1 WATS,^{SM} Ultra WATS^{SM} and FŌNCARD^{SM} calls. Plus, we'll waive the monthly service fee for the first three months.

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IBM PBX-to-host software provides ISDN-like features

Big Blue also enhances its PhoneMail system.

By Jim Brown
New Products Editor

DALLAS — IBM last week took the wraps off a PBX-to-host software link that supports ISDN-like features and also unveiled a redesigned PhoneMail voice-messaging system.

Announced at the International Communications Association's 42nd Annual Conference and Exposition here, IBM's CallPath is designed to help telemarketing centers with multiple telephone numbers process calls faster. Incoming calls are forwarded to agents along with data concerning the caller.

The new PhoneMail system announced at the show is 80% smaller than previous models but is still compatible with those models. Although it supports the same upper limit of 128 lines as its predecessor, the new model supports more storage and can be integrated with more private branch exchanges.

IBM also announced that seven vendors have released applications that support its AS/400 Telephony Application Services, which provide links between Application System/400 minicomputers and IBM PBXs, including the top-of-the-line 9751 PBX and the low-end 9722 Redwood switch (see "IBM releases latest AS/400 applications," page 54).

Due out in December, CallPath consists of CallPath 9750 software, CallPath Host link software and CallPath Host software. CallPath 9750 runs on IBM's 9751 switch in conjunction with dialed number identification software.

PHOTO ©1989 STEVE SAXTON/GAMMA LIAISON

IBM vice-presidents Mitchell Watson (left) and Ellen Hancock preside over ICA announcement of CallPath and PhoneMail upgrade.

When a call comes in, the switch distinguishes which number the caller dialed and forwards that information, along with the extension of the agent to which the call is being routed, to an IBM Personal System/2 running CallPath Host link software.

The Personal System/2 also supports IBM's NetView/PC interface software. It converts the data stream from asynchronous to synchronous and forwards it to an attached IBM host via LU 6.2 protocols.

CallPath Host software uses the incoming data to bring up a data screen on the 3270-type terminal of the agent receiving the call. The screen can inform the agent how to greet the incoming caller or ask the agent to call up data such as customer account information.

CallPath can also be used in conjunction with a switch-attached voice response unit that prompts callers to use their push-button phones to enter information before the call is routed to the host. An agent capable of

(continued on page 54)

US Sprint launches VPN, private-line service to UK

By Anita Taff
Washington Bureau Chief

DALLAS — US Sprint Communications Co. last week announced international digital private-line and Virtual Private Network (VPN) services to the UK.

The services, introduced at the International Communications Association's 42nd Annual Conference and Exposition here, will be provided over the PTAT transatlantic undersea fiber-optic cable US Sprint is building with Cable & Wireless PLC. The services are expected to be available soon after the cable is cut over this summer.

US Sprint also detailed plans to offer domestic fractional T-1 service beginning in September.

The UK portion of the international VPN service will be supported by Mercury Communications Ltd., a subsidiary of Cable & Wireless. Bill Burgess, vice-president and general manager of international services at US Sprint, said Mercury will upgrade its net to offer VPN, making it one of the first carriers outside of the U.S. to offer virtual network services.

US Sprint will begin testing international VPN services with three or four customers in the U.S. and UK beginning in December, Burgess said. Much of the testing will focus on implementing software in Mercury's switches that US Sprint uses to provide its domestic VPN service.

The networks of both US Sprint and Mercury are based on Northern Telecom, Inc. DMS-250 switches, meaning users in the UK will have the same virtual network features US Sprint offers domestic customers.

One of the primary benefits of international VPN service will be simplifying the construction of international networks that provide private network-like features. Burgess said differences in domestic private branch exchanges and those used overseas make it difficult to build networks that support private numbering plans.

Virtual network capabilities, by comparison, are provided through data bases in the network so the same set of services can be provided to end users regardless of the type of PBX employed, he said.

Burgess said US Sprint currently has about 200 users of its domestic VPN service, and a significant number of those have operations in the UK.

Although the international VPN service will initially serve the UK, it could be extended to other countries served by Mercury's European long-distance network, Burgess said. Agreements to offer the service to other countries will probably be announced in 30 to 60 days, he said.

Digital private-line service

US Sprint will begin offering its second new international service, digital private-line serivce, to the UK in August and to Europe in the fourth quarter. Transmission speeds will be sold in increments of 64K bit/sec up to 2.044M bit/sec, Burgess said. Prior to this service, US Sprint has offered only switched international services.

Burgess said US Sprint has been slow in entering the international market for private lines because it has become a commodity market and profit margins are low.

The only way US Sprint officials believed they could differentiate themselves was to wait until they could offer a better service

(continued on page 51)

ANSI weighs high-speed LAN protocol

By Laura DiDio
Senior Editor

SANTA BARBARA, Calif. — The eXpress Transfer Protocol (XTP), designed to maximize throughput of high-speed local networks, has been formally proposed to ANSI for consideration as a standard and has received the backing of IBM.

While XTP's certification as a standard is by no means certain, its formal proposal to ANSI does represent a good first step toward standardization, said Lyman Chapin, chairman of the ANSI X3S3.3 committee, which will study XTP.

XTP, which was developed by start-up Protocol Engines, Inc. (PEI) based here, corresponds to the network and transport layers of the International Standards Organization's Open Systems Interconnection network model.

The protocol is intended for use with 100M bit/sec Fiber Distributed Data Interface (FDDI) and higher speed networks to overcome throughput limitations of software-based protocols such as IBM's LU 6.2, Transmission Control Protocol/Internet Protocol, Xerox Corp.'s Xerox Network Systems and OSI's Transport Protocol Class 4 (TP4).

PEI formed a consortium of 11 companies last year to promote the development of XTP and push for its acceptance as a standard. PEI is heading the collaborative effort and will develop the Protocol Engine, a very large scale integration chipset that will support XTP. PEI is targeting the first quarter of 1990 for delivery of the Protocol Engine chipset.

In the past year, the group has grown to 19 member companies, each of which pays an annual fee to PEI and devotes engineering resources to XTP development.

An IBM spokeswoman confirmed last week that IBM recently became a member of the XTP consortium. "XTP is in the public domain as a possible emerging OSI-based standard, and we are following it," she said.

Also involved in XTP are Apollo Computer, Inc., The Boeing Co., Unisys Corp., Xerox, the U.S. Navy and the National Aeronautics and Space Administration.

When used with FDDI, XTP will enable networks to realize close to the full 100M bit/sec speed of the standard, according to Larry Green, president of PEI. Ultimately, XTP could be used in local nets operating at speeds up to 1G bit/sec.

"Currently, high-speed nets like FDDI that use existing software-based protocols only realize 10% to 20% of media bandwidth," Green said. "For instance, an FDDI network that uses TCP/IP might only have 15M to 20M bit/sec throughput."

Recent protocol benchmarks conducted at the University of Virginia in Charlottesville buttress Green's contention. The tests showed that TCP/IP, XNS and TP4 require computers to devote five to 10 times more processing power than XTP does in order to achieve equivalent transmission speeds, said Alfred Weaver, a computer science professor at the university who was involved in the XTP tests.

Initially, XTP will be targeted at leading-edge niche applications such as real-time military and aerospace networks, and integrated voice/data networks such as those being proposed in the IEEE 802.6 standard for metropolitan-area nets. The 19 companies on PEI's advisory board include firms that make products for all of these applications.

Green said, however, that XTP will also have wide appeal for commercial network users because it has features not found in existing protocols.

For instance, most protocols today are designed to support either file transfer or query transactions — not both. XTP is specifically designed to handle both functions, Green said.

Embedding the protocol directly in silicon minimizes time-consuming buffering, which is characteristic of protocols executed in software. "The result is that XTP has low data transmission delay and high throughput," Green added. XTP also has a multicasting feature that enables a single message to be sent to multiple destinations.

One early proponent of XTP, Northrop Corp., whose B2 Division in Pico Rivera, Calif., manufactures military aircraft, plans to use XTP to support applications running on military aircraft FDDI nets, said Marc Cohn, an engineering specialist in advanced avionics at Northrop.

XTP is intended for 100M bit/sec FDDI nets.

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"We like XTP because it's going to be based on the OSI model and it lets us send messages with minimal overhead. And the multicast feature will save us the time of transmitting multiple messages," Cohn said.

People involved in the XTP development effort, including members of the ANSI X3S3.3 committee, agreed it is a viable and workable protocol.

"There's no argument that XTP is a well-engineered protocol," ANSI's Chapin said. "The real issue though, is whether the requirements of the new very high-speed networks of 100M bit/sec and above are such that we can't live without XTP."

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NTI introduces net mgmt. for Meridian architecture

Smaller SL-100 switch also debuts at ICA show.

By Wayne Eckerson
Staff Writer

DALLAS — Northern Telecom, Inc. last week announced Meridian Network Control (MNC), the network management component of its Meridian Customer Defined Networking architecture.

MNC, announced at the International Communications Association's 42nd Annual Conference and Exhibition here, will enable customers to control Northern Telecom's full range of switches as well as products from other manufacturers.

Northern Telecom also used the conference to introduce a smaller version of its SL-100 switch, new system software for the SL-1 and a new Meridian SL-100 Automatic Call Distributor. The company also demonstrated multivendor network management in conjunction with Digital Communications Associates, Inc.

The MNC network management system is a combination of hardware and software that provides control over Northern Telecom's DMS-100, Meridian SL-100 and Meridian SL-1 switches. MNC can also be used to monitor the quality and operational status of network transmission links and components.

The system's software is based on the Open Systems Interconnection Common Management Information Protocol (CMIP) and Common Management Information Services (CMIS) protocols. The protocols were recently approved by the OSI/Network Management Forum, a standards body composed of some of the industry's largest vendors.

MNC software runs on multitasking Sun Microsystems, Inc. graphics workstations, which allow network managers to monitor and control the network from a central location. MNC collects details about call records and alarm information. It also keeps telemanagement records such as service orders and trouble reports, as well as data on inventory maintenance and billing.

The MNC network management system ranges in price from $150,000 to $300,000 and will be available in June.

Joint demo

The Northern Telecom/DCA demonstration at the show made good on the companies' promise in February to integrate their respective wide-area network management systems.

Northern Telecom linked the newly released MNC to DCA's Open Network Management System (ONMS) via an Ethernet local network that ran between the two vendors' booths on the show floor. DCA's ONMS is used to control the company's System 9000 T-1 multiplexers.

Jointly developed software based on CMIP and CMIS protocols enabled the vendors' net management systems to interoperate on a peer-to-peer basis. Each system could receive alarms collected by the other and detect faults across the entire network. The software resided on workstations running each vendor's network management system.

A DCA spokesman said the OSI-based software will be beta-tested at several sites this year, but he said he was unsure when the product would become commercially available.

Compact SL-100 switch

Northern Telecom also announced the new Meridian SL-100C digital private branch exchange. This switch is a smaller version of Northern Telecom's SL-100 unit. The SL-100C supports from 2,000 to 5,000 lines and can be expanded to support 60,000 lines by adding cabinets.

The SL-100C takes up less floor space than the SL-100, but it has most of the same features. For example, it supports the same high-volume automatic call distribution system as the SL-100. Both SL-100 systems support Integrated Services Digital Network Primary Rate and Basic Rate Interfaces, as well as Signaling System 7 (SS7).

The SL-100C PBX ranges in price from $1.4 million to $4 million and will be available later this year.

Northern Telecom also released new software for its SL-1 PBXs, Generic XII Release 13, that enables the switches to exchange ISDN information with other SL-1 switches over a Primary Rate Interface.

The software also provides a seven-digit internal dialing plan, instead of the four-digit numbering plan supported with earlier software. In addition, the software expands the size of call pickup groups and the number of speed-dialing numbers that the switch can support.

Automatic number identification information can be forwarded along with a phone call with the new software release. The software also increases the speed of host-to-host file transfers through the SL-1 to 9.6K bit/sec.

The cost of adding ISDN options on the Generic XII Release 13 software ranges in price from $5,200 to $31,700, depending on system size.

Lastly, the company announced the Meridian SL-100 Automatic Call Distribution system. The automatic call distributor (ACD), which works with the SL-100 family of switches, now supports ISDN Basic Rate and Primary Rate Interfaces as well as SS7.

The enhanced ACD supports as many as 256 different work groups and 256 agents per group. The system supports up to 4,000 agents at any given time.

In conjunction with Northern Telecom's ACD-MAX management information system, the enhanced ACD generates reports on agent and queue performance, among other things. The system operates on a Hewlett-Packard Co. 386 personal computer with a 100M-byte hard disk.

The price of a 150-agent ACD system with hardware and software is $30,000 and will be available in July. ◩

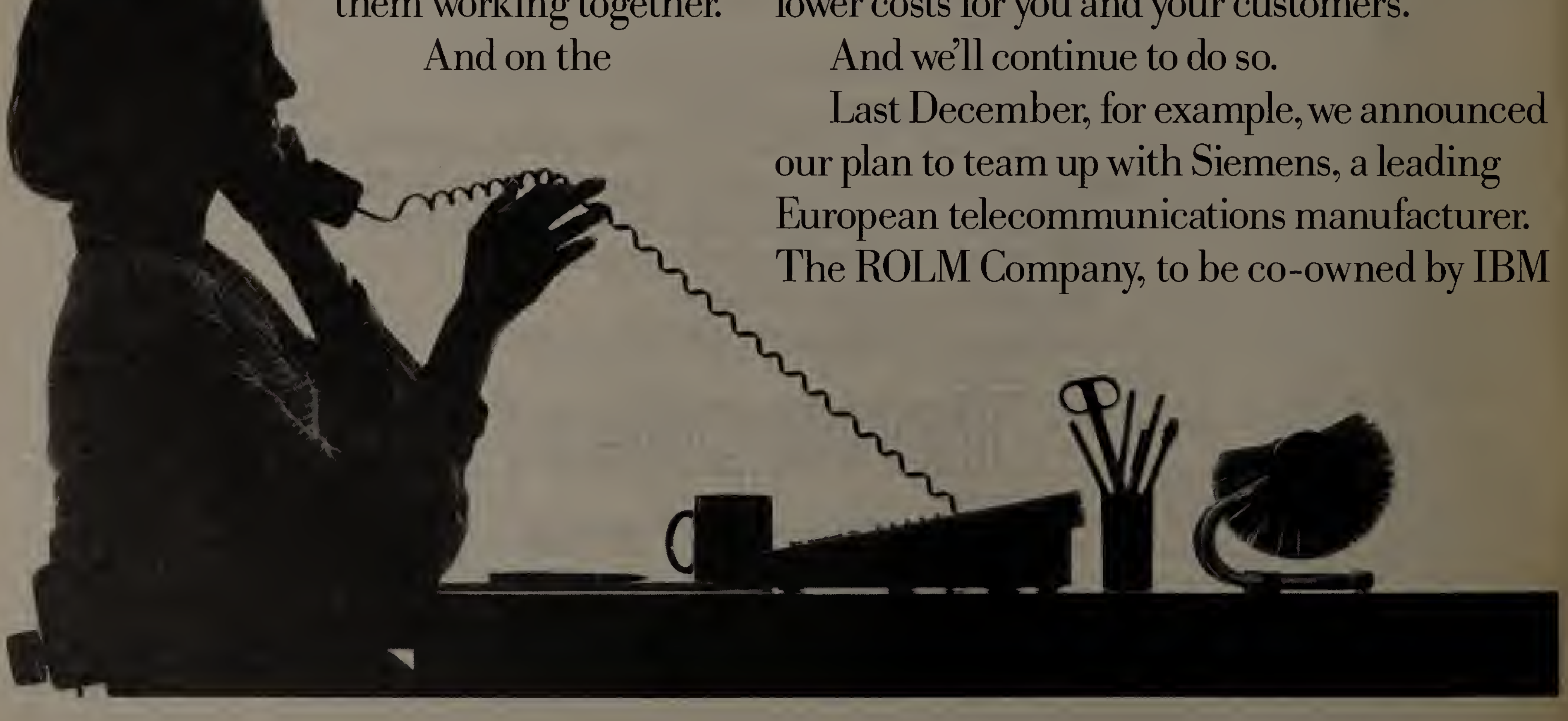
There are two sides

Voice and data.
We understand that your business has
become increasingly
dependent on the two of
them working together.
And on the
efficient communications that result.

That's why IBM has played a leading role in creating solutions to help you better manage voice and data networks, improve service and lower costs for you and your customers.

And we'll continue to do so.

Last December, for example, we announced our plan to team up with Siemens, a leading European telecommunications manufacturer. The ROLM Company, to be co-owned by IBM



DEC delivers WAN tools, T-1 plan

continued from page 1

der its maintenance program ("DEC to deal with StrataCom, *NW,* May 1).

StrataCom's fast-packet technology packetizes voice and data traffic and allocates bandwidth on an as-needed basis. StrataCom claims this technology uses bandwidth more efficiently than other T-1 devices that use time-division multiplexing, which reserves a fixed maximum bandwidth for each channel.

Blue news

The most significant of DEC's three IBM-related announcements was the introduction of the 3270 Terminal Option Card, which plugs into the DECserver 550 terminal server and allows up to eight 3270 users to access VAX applications through VT-220 terminal emulation.

The 3270s are linked to the DECserver, which can hold four Terminal Option Cards. The DECserver attaches to a DECnet local network and an IBM 3174 cluster controller, enabling users to hot-key between IBM and VAX host sessions.

The 3270 Terminal Option Card is available now and costs $1,695. A DECserver 550 with eight cards is priced at $23,192.

The 3270 Terminal Option Card is an important addition, said Steve Wendler, program director of office information systems at Gartner Group, Inc., a Stamford, Conn., research firm.

"For the first time, DEC is able to provide relatively low-cost, full-screen 3270 communications," Wendler said. Previous products let a 3270 user see just one screen line of a VAX application at a time.

But DEC still has a hole to fill in its 3270 offerings — wide-area 3270 communications.

"Most 3270s are in wide-area, not local-area, configurations," Wendler said. "The new product only addresses the local 3270s."

DEC also announced DECnet/SNA 100, new gateway software for DEC's MicroServer. The low-end gateway supports as many as 16 SNA sessions for DECnet-attached DEC workstations and networked IBM-compatible microcomputers over a single synchronous line at speeds up to 19.2K bit/sec.

DEC currently offers a higher performance gateway that supports two lines at up to 56K bit/sec.

DECnet/SNA 100 is available now and costs $10,000.

DEC also unwrapped a new version of VMS/SNA, software that links a VAX processor to an SNA network. Version 2.0 supports an X.25 link to SNA. Previously, the software supported only Synchronous Data Link Control protocol connections.

The new version is available now and costs between $630 and $17,290, depending on the host VAX model.

DEC offered additional X.25 capabilities with its new X25router 100, a low-end version of its current X.25 router product that provides access to an X.25 network for DEC devices. The new model supports a single synchronous line at speeds up to 19.2K bit/sec for as many as 16 X.25 virtual circuits. The product is available now and costs $6,000.

DEC's new MUXserver 300/DECmux 300 Remote Terminal Server enables users to link as many as 48 remote devices, such as asynchronous terminals, serial printers, personal computers in terminal-emulation mode, modems and non-DEC hosts, to a DECnet network. The older model supported just 16 devices.

The MUXserver 300 attaches to a local DECnet and is linked to a remote DECmux 300 via external synchronous modems and a dedicated leased line. The DECmux 300 handles two lines, each operating at up to 64K bit/sec. The new model will be available in June. The MUXserver 300 is priced at $9,000. The DECmux 300 is priced from $4,000 to $11,800.

The DECrouter 100 is a new low-end router that provides a single synchronous line at up to 19.2K bit/sec for linking as many as 16 remote workstations or microcomputers to a DECnet network. It is available now and costs $5,000.

DEC also unveiled enhanced DECrouter 2000 software that is three times as fast as the previous version, according to the company. Previously, the device supported one line at 256K bit/sec or four 64K bit/sec lines. The new model boosts the speed of the single-line configuration to 1.544M or 2.048M bit/sec.

DECrouter 2000 Version 1.1 is available now and costs $12,500.

Similarly, new software for the DECrouter 200 doubles the performance of that device, according to DEC. The router supports asynchronous connections between up to eight workstations and either a local Ethernet or a remote Ethernet via a modem.

The new version is available now and costs $100 for the software. The full system is priced at $3,610.

MCI wins big Westinghouse net contract

By Barton Crockett
Senior Editor

DALLAS — Westinghouse Electric Corp. last week revealed that it has awarded a hotly contested, multimillion-dollar contract for voice and data services to MCI Communications Corp.

The contract, which is valued at $75 million to $100 million over five years, will involve collocation of equipment in MCI points of presence — one of the few times the carrier has agreed to such an arrangement. The deal was announced at the International Communications Association's 42nd Annual Conference and Exposition here.

MCI won out over US Sprint Communications Co. and AT&T, which offered Westinghouse a Tariff 12 custom network deal ("Westinghouse mulls AT&T Tariff 12 bid," *NW,* Feb. 27).

According to David Edison, executive vice-president of corporate information and communications systems at Pittsburgh-

(continued on page 49)

to this story.

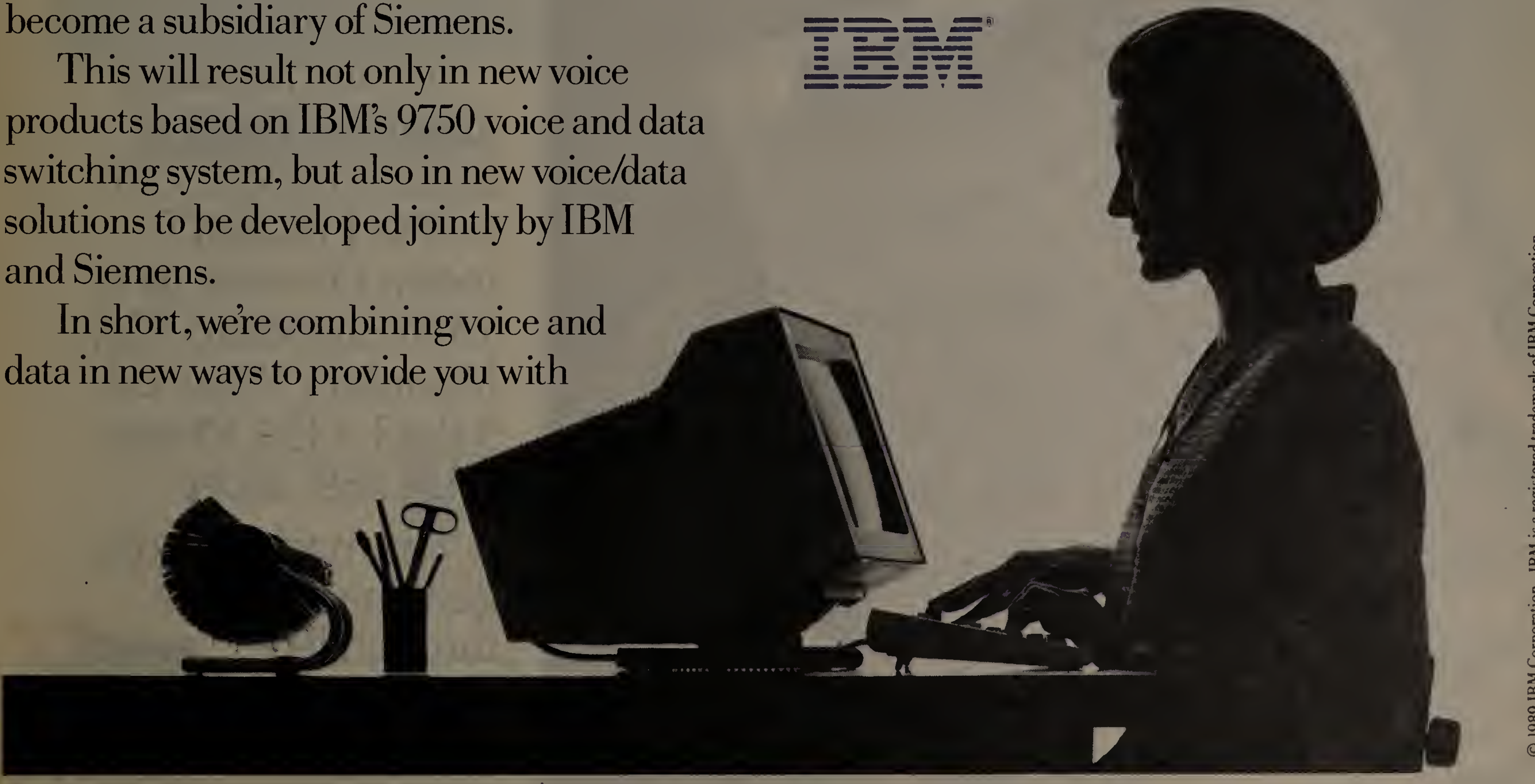
and Siemens, will market and service voice products made by ROLM Systems, which will become a subsidiary of Siemens.

This will result not only in new voice products based on IBM's 9750 voice and data switching system, but also in new voice/data solutions to be developed jointly by IBM and Siemens.

In short, we're combining voice and data in new ways to provide you with more efficient communications than ever.

And that's a story with a happy ending.

IBM



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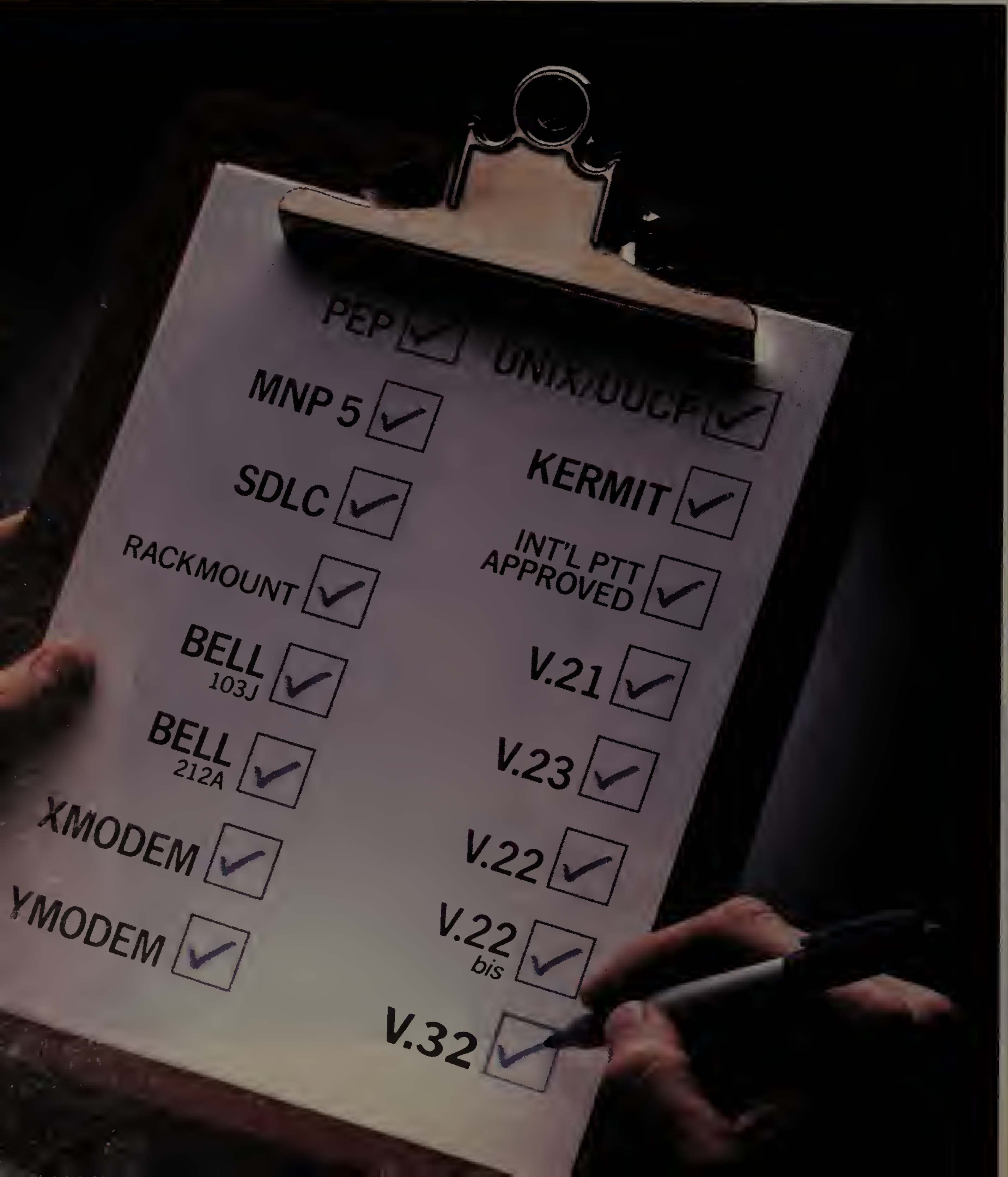
So, for large-volume or interactive transmissions, you won't find a better modem than the Telebit T2500. It supports all major modem standards, and is ideal for connecting micros to LANs or mainframes. Plus it easily handles international transmissions. And speaks fluently with more dial-up modems than any other.



In addition to the industry's highest data rate, Telebit's multicarrier PEP technology makes hang-ups and bad line problems a thing of the past.

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C. Please Answer ALL Questions, Sign & Date the Form.

1. Industry: (check one only)

01. ☐ Manufacturers (other than computer/communications)
02. ☐ Finance/Banking
03. ☐ Insurance
04. ☐ Real Estate
05. ☐ Healthcare Services
06. ☐ Legal
07. ☐ Hospitality
08. ☐ Retail/Wholesale Trade
09. ☐ Transportation
10. ☐ Utilities
11. ☐ Education
12. ☐ Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
13. ☐ Government State/Local
14. ☐ Government Federal
15. ☐ Military
16. ☐ Aerospace
17. ☐ Consultants (independent)
18. ☐ Carriers
19. ☐ Interconnects
20. ☐ Manufacturers (Computer/Communications)
21. ☐ VAR/VAD/Systems House
22. ☐ Distributor, Computer Related
23. ☐ Distributor, Communications Related
24. ☐ Other ____________________

2. Job function (check one only)

1. ☐ Networking Management (Responsible for both voice & data)
2. ☐ Data Communications Management (Responsible for data only)
3. ☐ Telecommunications Management (Responsible for voice only)
4. ☐ MIS Management (VP,Dir,Department Head)
5. ☐ Corporate Management (Chairman, President, Owner, General Manager, CEO, CIO, VP)
6. ☐ Financial Management
7. ☐ Engineering Management
8. ☐ Consultant (Independent)
9. ☐ Other____________________

3. Your primary responsibility (check one only)

1. ☐ Data Networking
2. ☐ Voice Networking
3. ☐ Both
4. ☐ None

4. Is your network: (check all that apply)

LOCAL AREA NETWORKS
1. ☐ Local (within building)
2. ☐ Local (in a campus environment)

WIDE AREA NETWORKS
3. ☐ International
4. ☐ National
5. ☐ Regional (several states)
6. ☐ Metropolitan

5. Which transmission media do you use in your network: (check all that apply)

Public:
1. ☐ Switched-Based (DDD,Wats,Megacom,etc.)
2. ☐ Leased Line (not including T-1)
3. ☐ T-1
4. ☐ T-3
5. ☐ Digital Data Service

Private:
6. ☐ Satellite
7. ☐ Microwave
8. ☐ Fiber Optic

6. Which of the following vendors will you consider buying your PBX/Central Office Switch from in the next 12 months? (check all that apply)

	A PBX	B COS	
01.	☐	☐	AT&T
02.	☐	☐	ALCATEL
03.	☐	☐	CONTEL
04.	☐	☐	ERICSSON
05.	☐	☐	FUJITSU
06.	☐	☐	HARRIS
07.	☐	☐	HITACHI
08.	☐	☐	IBM/ROLM Systems Division
09.	☐	☐	INTECOM
10.	☐	☐	MEMOREX TELEX
11.	☐	☐	MITEL
12.	☐	☐	NEC
13.	☐	☐	NORTHERN TELECOM
14.	☐	☐	SIEMENS
15.	☐	☐	STROMBERG-CARLSON
16.	☐	☐	TOSHIBA
17.	☐	☐	OTHER

7. What operating systems do you utilize? (check all that apply)

1. ☐ CICS
2. ☐ IBM DOS
3. ☐ MVS
4. ☐ UNIX
5. ☐ VM
6. ☐ VMS
7. ☐ OTHER ____________

8. Please indicate by vendor the number of mainframes/minicomputers installed in your network.

VENDOR	MAIN-FRAMES A	MINIS B
01. DEC		
02. IBM		
03. AMDAHL		
04. AT&T		
05. HONEYWELL BULL		
06. NCR		
07. DATA GENERAL		
08. WANG		
09. HEWLETT PACKARD		
10. PRIME		
11. TANDEM		
12. UNISYS		
13. CONTROL DATA		
14. OTHER		

9. Please indicate by vendor the number of microcomputers:

A) Presently installed in your network.
B) The approximate quantity you plan to install in the next 12 months.

MICROCOMPUTER VENDOR/ WORKSTATION	PRESENTLY INSTALLED A	PLAN TO INSTALL NEXT 12 MONTHS B
01. COMPAQ		
02. PCs based on 80386 chip		
03. IBM (PC,XT,AT)		
04. IBM (PS/2)		
05. APPLE (Macintosh)		
06. AT&T		
07. SUN		
08. APOLLO		
09. LAPTOPS		
10. OTHER		

10. What is your host network architecture? (check all that apply)

1. ☐ SNA
2. ☐ DECNET
3. ☐ OSI
4. ☐ GOSIP
5. ☐ MAP/TOP
6. ☐ OTHER ____________

11. What is your LAN Operating System? (check all that apply)

01. ☐ 10NET
02. ☐ 3COM (3+, 3+open)
03. ☐ APPLETALK
04. ☐ BANYAN (VINES)
05. ☐ DCA (IRMALAN)
06. ☐ IBM (OS/2 EXTENDED EDITION)
07. ☐ IBM (PC Network)
08. ☐ MICROSOFT (LAN MANAGER)
09. ☐ NOVELL (NETWARE)
10. ☐ NOVELL (NETWARE MAC)
11. ☐ TOPS (TOPS)
12. ☐ OTHER ____________________

12. What is your LAN environment? (check all that apply)

1. ☐ Token Ring
2. ☐ ARCNET
3. ☐ Ethernet
4. ☐ Starlan
5. ☐ Other____________

NETWORK WORLD
The Newsweekly of User Networking Strategies

13. What is the scope of your involvement in purchase decisions for Network/Communications products + services? (check all that apply)

1. ☐ Organization-wide
2. ☐ Subsidiary/division wide
3. ☐ Department-wide
4. ☐ For multiple organizations (consultants)
5. ☐ Other ____________________

14. For which network hubs outside of the US do you have purchasing influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East

15. Write below the total number of sites for which you have purchase influence? ☐

16. Check ALL that apply in columns A and B

A) I am presently involved in the purchase process for the following products/services:
B) I plan to purchase the following products/service in the next 12 months:

	Presently Involved A	Plan to Purchase B	- COMPUTERS/PERIPHERALS: -
01.	☐	☐	Micros
02.	☐	☐	Minis
03.	☐	☐	Mainframes
04.	☐	☐	Front End Processors
06.	☐	☐	Terminals
07.	☐	☐	Printers
	A	B	- SOFTWARE: -
10.	☐	☐	Network Management
11.	☐	☐	Micro to Mainframe
12.	☐	☐	Network Security
13.	☐	☐	Call Accounting
14.	☐	☐	Data Base Management
15.	☐	☐	Systems Software
16.	☐	☐	Communications Software
17.	☐	☐	Applications Software
18.	☐	☐	Network Operating Systems Software
	A	B	- DATA COMMUNICATIONS -
20.	☐	☐	Modems (over 9.6kbps)
21.	☐	☐	Modems (under 9.6kbps)
22.	☐	☐	T-1 multiplexers
23.	☐	☐	Other Multiplexers
24.	☐	☐	Data Switches
25.	☐	☐	Matrix Switches
26.	☐	☐	Packet Switches
27.	☐	☐	Local Networks
28.	☐	☐	Protocol Converters
29.	☐	☐	Network Management Systems
30.	☐	☐	Terminal Emulation Boards
31.	☐	☐	Facsimile Machines
32.	☐	☐	Diagnostic Test Equipment
33.	☐	☐	Data Service Unit
	A	B	- TELECOMMUNICATIONS -
40.	☐	☐	PBXs (over 1000 lines)
41.	☐	☐	PBXs (200 - 1000 lines)
42.	☐	☐	PBXs (under 200 lines)
43.	☐	☐	Key Systems
44.	☐	☐	Automatic Call Distributors
45.	☐	☐	Voice Messaging Systems
46.	☐	☐	Channel Service
48.	☐	☐	Short Haul Bypass Equipment (Microwave, Infrared, etc.)
	A	B	- TRANSMISSION SERVICES -
50.	☐	☐	Switched Voice
51.	☐	☐	Dedicated Leased Line
52.	☐	☐	T-1
53.	☐	☐	T-3
54.	☐	☐	Digital Data
55.	☐	☐	Packet Switched
56.	☐	☐	Centrex
57.	☐	☐	Central Office LAN
58.	☐	☐	Satellite
59.	☐	☐	Fiber Optic
60.	☐	☐	On-Line Information
61.	☐	☐	Systems Integration
62.	☐	☐	Network Optimization
63.	☐	☐	Microwave
64.	☐	☐	Cables, Connectors, Baluns
65.	☐	☐	ISDN
66.	☐	☐	EMail

17. Estimated value of networking equipment and services:

A) Which you helped specify, recommend or approve in the last 12 months?
B) Which you plan to help specify, recommend or approve in the next 12 months?

	A	B	
01.	☐	☐	$25 million and over
02.	☐	☐	$20 - $24.9 mil
03.	☐	☐	$10 - $19.9 mil
04.	☐	☐	$5 - $9.9 mil
05.	☐	☐	$1 - $4.9 mil
06.	☐	☐	$500,000 - $999,999
07.	☐	☐	$250,000 - $499,999
08.	☐	☐	$100,000 - $249,999
09.	☐	☐	$50,000 - $99,999
10.	☐	☐	under $50,000

18. Estimated gross annual revenue of your entire company/institution: (check one only)

1. ☐ over $10 billion
2. ☐ $1 to $9.9 bill
3. ☐ $500 mil to $1 bill
4. ☐ $100 to $499.9 mill
5. ☐ $50 to $99.9 mill
6. ☐ $10 to $49.9 mill
7. ☐ $5 to 9.9 mill
8. ☐ under $5 mill

19. A) Estimated number of employees for your entire corporation: (check one in column A) B) Estimated number of employees at this location: (check one in column B)

	A	B	
1.	☐	☐	over 10,000
2.	☐	☐	5,000 - 9,999
3.	☐	☐	2,500 - 4,999
4.	☐	☐	1,000 - 2,499
5.	☐	☐	500 - 999
6.	☐	☐	under 500

20. When do you plan to implement ISDN?

1. ☐ Currently testing
2. ☐ 12 - 24 months
3. ☐ 24 - 36 months
4. ☐ 36 + months
5. ☐ not implementing

9505NWW

INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

> "Under the price cap structure, AT&T has a license to engage in price manipulation to cripple competitors and stifle innovation."
>
> **Charles Johnson**
> Chairman and chief executive officer
> General DataComm, Inc.
> Middlebury, Conn.

People & Positions

Microsoft Corp. last week named **Bernard Vergnes** vice-president, Europe.

Vergnes was previously general manager of the company's French subsidiary, Microsoft SARL, since its establishment in 1983. In his new role, Vergnes will be responsible for all European subsidiaries. The European office will be established in Paris.

Michael Lacombe was named general manager of Microsoft SARL to replace Vergnes. Lacombe most recently served as the assistant general manager for marketing and sales of the French subsidiary.

The company also named **Jeremy Butler** senior vice-president of international and OEM sales. Previously, Butler was general manager of European sales.

Data General Corp. of Westborough, Mass., last week announced three new members of its board of directors: **John McElwee, Ronald Skates** and **Donald Trautlein**. They will serve until the company's next annual shareholders' meeting in January 1990. The board now consists of eight members.

McElwee was chairman of the board and chief executive officer of John Hancock Mutual Life Insurance Co. until his retirement in 1986.

Skates has been executive vice-president and chief operating officer of DG since 1988.

Trautlein was chairman and chief executive officer of Bethlehem Steel Corp. until his retirement in 1986.

PHOTO ©1989 STEVE SAXTON/GAMMA LIAISON

Infotron's James Castle at last week's ICA conference in Dallas.

Infotron to buy T-3 mux maker Licom

T-1 multiplexer maker attempts to strengthen position in emerging T-3 market with buyout.

By Bob Brown
Senior Writer

CHERRY HILL, N.J. — T-1 multiplexer maker Infotron Systems Corp. last week agreed to acquire Licom, Inc., a manufacturer of T-3 multiplexers, in an effort to strengthen its position in the emerging T-3 market.

Financial terms of the proposed acquisition, which is expected to be finalized later this week, were not disclosed. Licom is a privately held company based in Herndon, Va., with about 80 employees.

The acquisition would give Infotron direct access to Licom's fiber-optic T-3 technology and possibly enable it to cut costs by consolidating its manufacturing and marketing operations with those of Licom.

> Infotron has already brought Licom's T-3 multiplexer under its net management system.
>
> ▲▲▲

Infotron currently sells a repackaged version of Licom's T-3 multiplexer under the name StreamLine 45 through an OEM agreement established in the fourth quarter of 1988.

Infotron has already brought Licom's T-3 multiplexer under its network management system, according to an Infotron spokesman.

Rosemary Cochran, a principal at Vertical Systems Group, a Dedham, Mass.-based market research and consulting firm, applauded the move, saying it makes sense for Infotron to own Licom's technology because Licom's T-3 products play an integral role in Infotron's product strategy.

"The acquisition is a long-term investment since there is no pent-up demand for T-3 on the part of end users," Cochran said. "But it's what users are looking for in the future."

The StreamLine 45 is the only T-3 multiplexer available that supports drop-and-insert networking, as opposed to point-to-point communications, an Infotron spokesman said.

But a number of Infotron's T-1 rivals are readying competitive T-3 offerings. For example, Network Equipment Technologies, Inc. announced a T-3 multiplexer last month. Newbridge Networks, Inc. is said to be readying its MainStreet multiplexers for T-3 support by year end ("Users push vendors for T-3 upgrade path," *NW*, April 24).

In addition, Digital Communications Associates, Inc. last year purchased Digital Transmission Systems, a T-3 start-up.

The proposed acquisition positions Infotron to support a number of emerging applications, including videoconferencing, local-area-to-wide-area network transport, host channel extension, and computer-aided design and manufacturing, said James Castle, the company's president and chief executive officer.

Infotron will also gain about 50 Licom T-3 customers, many of which are common carriers and utility companies, an Infotron spokesman said. T-3 sales can often open the door to sales of other products, he said.

(continued on page 10)

AT&T, MCI to link with Telenet Telemail via X.400

Telenet, AT&T also tie into overseas E-mail nets.

By Bob Brown
Senior Writer

MORRISTOWN, N.J. — AT&T and MCI Communications Corp. last week announced plans to forge X.400 links between their electronic mail networks and Telenet Communications Corp.'s Telemail service.

Separately, AT&T and Telenet announced that they have struck agreements with public E-mail providers overseas to extend the international reach of their services. Telenet also bolstered its E-mail service by offering new ties to private E-mail nets.

X.400 links

AT&T's and MCI's X.400 interconnections with Telemail, scheduled to be completed this summer, will allow AT&T Mail and MCI Mail users to communicate with customers, suppliers and other parties using Telenet's Telemail E-mail network.

AT&T and MCI customers will not be required to purchase additional hardware or software to exchange electronic messages with Telemail users. Also, Telemail users can directly message AT&T Mail and MCI Mail users without any additional expense.

While AT&T and MCI users will be able to exchange messages with Telemail users, the carriers' networks will not be interconnected; an AT&T Mail user will not be able to exchange messages with MCI Mail users.

An interconnection between AT&T and MCI could take place in the future since both carriers are striving for widespread interconnection, according to spokesmen from both companies.

> Telemail users can message AT&T Mail and MCI Mail users without any additional expense.
>
> ▲▲▲

By linking up through Telemail, the three companies will create large pools of E-mail users. Telemail users, for instance, would have access to roughly 350,000 mailboxes, MCI Mail users could send messages to about 290,000 mailboxes and AT&T Mail customers could post E-mail

(continued on page 10)

INDUSTRY BRIEFS

Hitachi, Ltd. of Tokyo and **Electronic Data Systems Corp. (EDS)** of Dallas last week announced the formation of a joint venture company called **Hitachi Data Systems Corp.**

The joint venture, based in Santa Clara, Calif., is a holding company for 100% of the stock of **National Advanced Systems, Inc.** Hitachi Data Systems last week completed its acquisition of National Advanced Systems from **National Semiconductor Corp.** for roughly $400 million.

National Advanced Systems will be the major business of Hitachi Data Systems.

National Advanced Systems sells IBM-compatible mainframes and storage devices.

Gary Moore, previously vice-president of the Technical Acquisition Division at EDS, was named president and chief executive officer of Hitachi Data Systems.

Sun Microsystems, Inc. last week reported net income of $31 million for its third fiscal quarter ended March 31, more than double the net income of $14.3 million reported for the third quarter of 1988.

Revenue grew to $497.4 million for the third fiscal quarter, up 92% from the $259.7 million reported in the third quarter last year.

Scott McNealy, president and chief executive officer of the Mountain View, Calif.-based maker of workstations, servers and Unix operating system software, said strong sales of the company's newest products strengthened third-quarter results. The Sun386i low-end family of workstations accounted for better than 10% of the company's overall third-quarter systems revenue, he said.

Infotron to buy T-3 mux maker

continued from page 9

Licom's expertise in fiber optics will give Infotron an edge in developing products that provide users with a smooth migration path to the emerging international Synchronous Optical Network (SONET) standard for carrying T-3s over fiber-optic lines, said Ron Foster, Licom's president. Licom's current offerings already support both copper and fiber-optic interfaces, he said.

"SONET will become the standard for optical carrier facilities in the early 1990s," Foster said.

Licom's fiber-optic know-how will be invaluable to Infotron in pursuing this market, he added.

Licom's T-3 multiplexer complies with the U.S.-only Synchronous Transmission standard, which defines T-3 as a 44.73M bit/sec pipeline. SONET defines T-3 speed as 51.84M bit/sec.

The acquisition of Licom is "a very fortuitous opportunity" for Infotron, according to Andy Schopick, vice-president and senior analyst at SoundView Financial Group, a Stamford, Conn.-based investment firm. "Currently, Licom probably has as good, if not better, technology in this area [T-3] than anyone else," Schopick said.

Other T-1 vendors that are seeking to acquire T-3 technology may find the pickings slim. T-1 vendors are entering the T-3 market via both acquisitions and internal research and development, Schopick said. ◘

AT&T, MCI to link with Telenet Telemail

continued from page 9

to 215,000 mailboxes.

AT&T Mail and MCI Mail users also have access through X.400 to some 170,000 business users from British Telecommunications plc's U.S.-based Dialcom, Inc. subsidiary, he said.

By contrast, Western Union Corp.'s EasyLink service supports roughly 200,000 domestic corporate mailboxes, according to Link Resources Corp., a New York-based market research firm.

Telemail supports 180,000 domestic corporate mailboxes, while MCI Mail has 110,000 such mailboxes and AT&T Mail has about 35,000 domestic corporate mailboxes (this does not include some 65,000 users within AT&T itself), according to Thomas Baba, a research analyst with Link Resources.

Reaching out

Separately, AT&T and Telenet last week extended the reach of their worldwide E-mail services by announcing interconnection agreements with overseas vendors.

Telenet said it inked agreements with public E-mail service providers in Belgium, Australia and Sweden, enabling Telemail customers to exchange data with users in those countries.

Likewise, AT&T said it reached similar agreements with public providers in Finland, Sweden, South Korea and Australia.

Telenet also announced interconnection between its public E-mail systems and a number of private E-mail systems. Users of Xerox Corp.'s Xerox Network Systems X.400 gateway, Wang Laboratories, Inc.'s Office/X.400 Gateway, Hewlett-Packard Co.'s HP DeskManager private E-mail systems and Soft-Switch, Inc.'s X.400 Gateway can also access Telemail.

The interconnection of public E-mail systems to one another, as well as to private E-mail networks, is expected to snowball this year in response to user demand, vendors and analysts said. Both the U.S. government and the Aerospace Industries Association, a trade association of major aerospace companies, have said they will only use public E-mail networks that support X.400.

> The interconnection of public E-mail systems to one another, as well as to private E-mail networks, is expected to snowball this year in response to user demand.
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> ▲▲▲

AT&T and Dialcom announced earlier this year what they dubbed "the first commercial interconnection between two domestic E-mail services" ("AT&T, British Telecom to link messaging nets," *NW*, Jan. 23). That agreement was signed to enable users of the Federal Telecommunications System (FTS) 2000 version of AT&T Mail, called FTS Mail, to access Dialcom's proprietary data bases. Dialcom is a subcontractor under AT&T for the FTS 2000 contract.

AT&T also opted to link its E-mail users with Telenet's Telemail due to X.400 provisions in the FTS 2000 award, which it won along with US Sprint Communications Co. Telenet is a US Sprint business unit.

E-mail vendors have been saying for years that they would support connection of public networks, but they are only now responding because of organized user demands, said Mark Winther, vice-president of electronic communications research at Link Resources. "The vendors didn't really want to expose their business base to the other guy, but users aren't giving them any choice," Winther said.

"Interconnection agreements are a valuable thing and should increase overall message traffic," Winther said. "The more places people can send messages to, the more messages they will send." ◘

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TELECOMMUNICATIONS

CARRIER SERVICES, CENTREX, CPE, WIRING SYSTEMS AND BYPASS

Worth Noting

> "There are four PBX system architecture constraints: real estate within the system, traffic capacity, memory capacity and the real-time processor."

Richard Kuehn
President
RAK Associates
A communications
consulting firm
in Cleveland

Carrier Watch

Talisman Communications Corp. recently announced a service called 1-900-Weather, which enables callers to hear local weather reports all over the world. The service will be sponsored and promoted by individual firms.

Callers access the service by dialing the area code or the first three letters of the city in question. They will be greeted by a message from the sponsor followed by a weather report.

American Express Co., for example, is sponsoring the number 1-900-321-1212, according to Talisman. Callers will hear a message saying "Welcome to the Worldwide Weather Line, brought to you by American Express Travelers Checks."

A charge of 75 cents per minute will be reflected on each caller's local phone bill. Sponsors will share revenues of approximately 40 cents per minute.

Cable & Wireless Communications, Inc. has announced a service called Uni-T that will enable customers to use local T-1 trunks to access its switched and private-line long-distance services.

Integrating access for services that previously required separate access facilities will help reduce costs, the company said. Local access can represent up to 50% of the cost of long-haul circuits. Customers can use their own multiplex-

(continued on page 12)

Michigan State christens new telecom learning lab

Facility features hands-on approach to training.

By Sarah Vandershaf
West Coast Correspondent

EAST LANSING, Mich. — Michigan State University's Department of Telecommunication here recently dedicated its new Information Technologies and Services Laboratory to telecommunications instruction and research.

The laboratory was funded by a $225,000 donation from Michigan Bell Telephone Co. The lab is outfitted with a Northern Telecom, Inc. SL-1ST and a 3Com Corp. 3+Share local network, according to Robert LaRose, assistant professor of telecommunication at the school.

> The lab is outfitted with a Northern Telecom SL-1ST and a 3Com 3+Share local net.

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According to a statement issued by the school, "Hands-on training with the equipment, combined with course work, will help students learn how to apply telecommunications systems to meet strategic business objectives and to become personally proficient in the use of information technologies."

LaRose said the lab has 16 computer workstations similar to what students would find if they went to work for a common carrier, regulatory agency or a telecommunications user.

The laboratory will offer training in such fields as systems management, telephone traffic analysis and private network design, LaRose said.

Researchers will also use the laboratory to examine the social impact of new telecommunications technologies such as Custom Local Area Signaling Services. These offerings allow telephone service customers, for example, to block certain callers or flag callers with an identifying ring.

WASHINGTON UPDATE

BY ANITA TAFF

Report finds AT&T not dominant. The Federal Communications Commission's Office of Plans and Policy earlier this month released a working paper that concludes AT&T is no longer a dominant carrier and should not be subject to greater regulation than its competitors.

The analysis, prepared by John Haring, director of the office, with the help of another staff member, was released in response to FCC Chairman Dennis Patrick's request several weeks ago that the commission reopen the issue of AT&T's market status. The report includes a disclaimer stating that the views expressed do not necessarily reflect those of the FCC.

Haring concludes that the crucial factor in determining AT&T's market power is the level of competitors' transmission capacity relative to AT&T's capacity. In determining that AT&T is no longer dominant, Haring relied upon figures provided by Lap Lee, an analyst with the brokerage firm of Salomon Brothers, Inc. The figures show that the combined networks of AT&T's two chief rivals, MCI Communications Corp. and US Sprint Communications Co., represent 47% of the industry's total investment in plant. AT&T's investment in plant represents roughly 40% of the total market.

The figures also compare competitors' ability to supply the market's total transmission needs relative to AT&T. If AT&T is assumed to be capable of serving 100% of the market, MCI could serve 71% and US Sprint could serve 44%. With other competitors' facilities factored in, the FCC report indicates that AT&T's rivals could serve 146% of the market.

Haring concludes that AT&T is therefore no longer a dominant carrier. "Claims that it is [dominant] for the most part represent self-serving attempts to sustain an outmoded regime of asymmetric regulation that supplies competitors with protection from competition," the report said.

University of Maryland taps AT&T for campus network project

Contract value:	$32 million.
Cabling:	Replace existing wiring in 260 buildings and lay cables to a new facility built to house switches and ancillary equipment.
Switches:	Two AT&T System 85 PBXs serving 17,000 new telephone stations.
Maintenance:	10-year plan.
PBX add-ons:	AT&T Audix voice mail system.
Computers:	Four AT&T 3B2 minicomputers.
Other:	AT&T will provide fiber to 12,000 workstations on campus.
Competitors:	31 other vendors, including IBM, Northern Telecom, Inc. and The Chesapeake and Potomac Telephone Co. of Maryland.
Planned cutover date:	August 1990.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: AT&T, BASKING RIDGE, N.J.

Virtual nets struggle to win user support

While a few large users are sold on the services, other companies have been slow to accept them.

By Sarah Vandershaf
West Coast Correspondent

Although some large businesses are moving more and more of their voice traffic to virtual private networks, analysts say the overall migration to these services is proceeding at a glacial pace.

Among the true believers are General Motors Corp. and New York-based Metropolitan Life Insurance Co.

GM subsidiary Electronic Data Systems Corp. (EDS), which manages the GM network, is moving as many as 200 GM offices off the company's private T-1 backbone to AT&T's Software-Defined Network (SDN) service.

The move, which will affect offices in the Western and Southeastern U.S., is expected to make GM one of AT&T's largest SDN users and reduce the automaker's calling costs from .18 cents per minute to less than .13 cents per minute.

Metropolitan Life is also taking the plunge. It is migrating its analog tandem tie-line network to AT&T's SDN, a move that will save the company more than $2 million a year, said Scott Albahary, a senior systems engineer.

"We're in the midst of installing the first 75 sites, with 35 sites already installed," Albahary said. After reevaluating the network in the fall, Metropolitan Life may add as many as 150 more sites, he said.

Metropolitan Life chose AT&T's SDN because "the quality of service we get from AT&T is excellent," Albahary said. Another reason was Metropolitan Life's long-standing relationship with AT&T. "We didn't want to chuck all that for another vendor," he said.

Companies such as GM and Metropolitan Life are moving to virtual private networks because they provide an economical alternative to dedicated facilities needed to attach sites to backbone networks and they maintain support of private network features such as uniform dialing plans. Virtual network services route traffic among sites using software in the carrier's switches.

Besides AT&T, other virtual network services include US Sprint Communications Co.'s Virtual Private Network (VPN) and MCI Communications Corp.'s Vnet.

Despite the enthusiasm of companies such as GM and Metropolitan Life, the industry as a whole has been slow to accept the services, according to analysts. Some companies, in fact, are consolidating their virtual networks rather than expanding them.

Formica Corp. of Cincinnati, for instance, had 10 sites on its network when the company began using US Sprint's VPN in 1986. Formica has since switched three sites back to WATS for economic reasons, said Bob Patak, the company's project leader of technical support.

Nonetheless, Patak is satisfied with VPN. "Since the transition from nonfiber to a completely fiber network, VPN's reliability, availability and functionality have been all that they have advertised it to be. US Sprint has

(continued on page 12)

Carrier Watch

continued from page 11

ing equipment or Cable & Wireless-provided channel banks to support Uni-T.

The carrier also announced 64Clear, an option to its Intelli-Flex fractional T-1 service that enables customers to use the full 64K bit/sec bandwidth of a DS0 channel. The service previously supported only 56K bit/sec DS0 channels. The company said 64Clear will appeal to customers with international requirements because European standards require a full 64K bit/sec circuit.

Cable & Wireless is a subsidiary of Cable and Wireless PLC, a multinational telecommunications organization.

Metropolitan Fiber Systems, Inc., a company that operates fiber-optic networks in several major cities, recently began construction of a fiber backbone in downtown San Francisco. Metropolitan Fiber Systems currently operates networks in Chicago, Philadelphia and Baltimore and is building networks in Boston and Minneapolis.

The San Francisco network is expected to serve areas with approximately 20 million square feet of office space. It is scheduled to be completed before the end of the year.

AT&T last week announced it will reduce the order-processing charge from $10 to $5 for new Reach Out America customers who sign up for the service during May and June. The calling plan costs $8.70 per month and covers an hour of call time to anywhere in the U.S. during weekends and nighttime calling hours. Additional minutes beyond the first hour cost 11.5 cents each, or $6.90 per hour.

US West Communications, Inc. and **Northern Telecom, Inc.** restored telephone service to three north central Iowa towns within 60 hours after a recent tornado tore the roof off the local telephone company building and rain damaged the local telephone company's crossbar switch. Service was restored using a containerized, 2,500-line Northern Telecom DMS-10 emergency switch that was delivered by truck. Northern Telecom keeps several emergency switches ready for such incidents.

US West Communications, Inc. last week signed on **Octel Communications Corp.** as the provider of voice-processing systems it will use to provide voice information services to residential customers. US West Voice Messaging Service will answer busy or unanswered calls with a personal greeting and take messages.

The Teleconnect Division of **Telecom*USA Long Distance Co.** recently announced Check-Link, a long-distance service for check and credit card verification. Check-Link is a toll-free 800 service that is charged in six-second segments.

Nynex Computer Services Co. recently announced an agreement with Compression Labs, Inc. to resell the latter's Rembrandt Video Systems and Rembrandt 56 Video System coder/decoders as well as the company's Gallery 2000 Video Room System. The products will be provided in conjunction with Nynex's Conference Connection videoconferencing system.

The Rembrandt Video System provides full-motion video transmission at bandwidths from 384K to 3.13M bit/sec and is compatible with Nynex's Superpath T-1 service.

The Rembrandt 56 transmits full-motion video from 56K to 384K bit/sec and is compatible with Nynex's Switchway switched 56K bit/sec service. The company will use the Gallery 2000 system to provide self-contained, portable videoconferencing systems. ◘

Virtual nets struggle to win user support

continued from page 11

provided excellent service," he said.

The switch to virtual private network services, though slow, is an inevitable consequence of increasingly sophisticated technology, according to Paris Burstyn, an analyst with Business Research Group, a market research and consulting firm based in Newton, Mass.

"The general trend is that some companies that used to manage their own networks are moving back onto the public network," Burstyn said. Because small businesses generally have less need for virtual private networks, users tend to be larger businesses, he said.

But many big companies are reluctant to switch to a virtual private network and relinquish the secure feeling of having a private network, Burstyn said.

US Sprint has capitalized on this reluctance with its VPN service by marketing it as a complementary service to private networks already in place, according to Joaquin Gonzalez, a principal with Fairfax, Va.-based Network Strategies, a practice of Ernst & Whinney. As a result, VPN has become the dominant virtual private network service, he said.

AT&T originally intended its SDN to supplant private networks, Gonzalez said. AT&T's idea was that "if we make virtual private networks cheap enough, they should blow dedicated [private] networks away," he said.

US Sprint, on the other hand, assumed that customers would not give up their T-1 backbone networks and would, therefore, use virtual private networks only to link low-volume sites to the backbone, Gonzalez said.

Measured by numbers of customers, US Sprint's philosophy has apparently won. US Sprint has installed more than 175 of its VPNs, which is "a lot more than AT&T," Gonzalez said. ◘

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Service bureaus offer low-price alternative for telemanagement

Users can try option without committing capital, resources.

Second of two parts.

By Ricardo Brutocao
Special to Network World

Service bureaus provide an excellent, cost-effective approach to telemanagement for almost all but the smallest organizations. And even small enterprises might consider the possibility of starting out with a service bureau.

Brutocao is president of Account-A-Call Corp., a Burbank, Calif.-based vendor that licenses call-accounting software for independent use and operates call-accounting service bureaus.

Using telemanagement service bureaus to track telecommunications costs requires little initial investment, and the user gains an opportunity to evaluate the system without a major commitment in time or personnel. Users can also count on predictable monthly costs since they are normally charged only for calls processed. There are no hidden costs.

With a service bureau, the user does not need an internal staff to operate computers, support programs or analyze data before final reports are printed. All of these functions are performed by the service bureau and are included in the monthly fee.

Since service bureaus usually deliver a large number of standard reports that analyze data from many perspectives, there is no need to develop additional reports.

When a telecommunications manager signs up with a reliable, well-equipped service bureau, he should look for the following:

- Error-free results from thoroughly tested software.
- Systems with the most current tariffs and costing information.
- Variety and completeness of reports.
- Responsive customer support staff for assistance with interpretation of data, modification of system parameters and utilization of data for better network performance.
- Minimal requirement for manpower at customer facilities.
- Minimal financial expenditure to commence processing.
- No risk of obsolescence. The service bureau agrees to provide equipment and processing power appropriate to performance of the function.
- Equipment redundancy and data security through multiple-location storage.
- Processing priority. The telemanagement function does not have to compete with other in-house demands on limited equipment and personnel.

The service bureau business is highly competitive because clients have little invested and can move easily. As a result, service bureaus tend to treat customers very well.

Some companies provide both service bureau and stand-alone telemanagement systems, enabling customers to move easily from one to the other. This migration capability provides an advantage in that customers with in-house telemanagement systems that develop a hardware problem or personnel shortage could move the function to the service bureau.

> With a service bureau, the user does not need an internal staff to operate computers, support programs or analyze data before final reports are printed.

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Conclusion

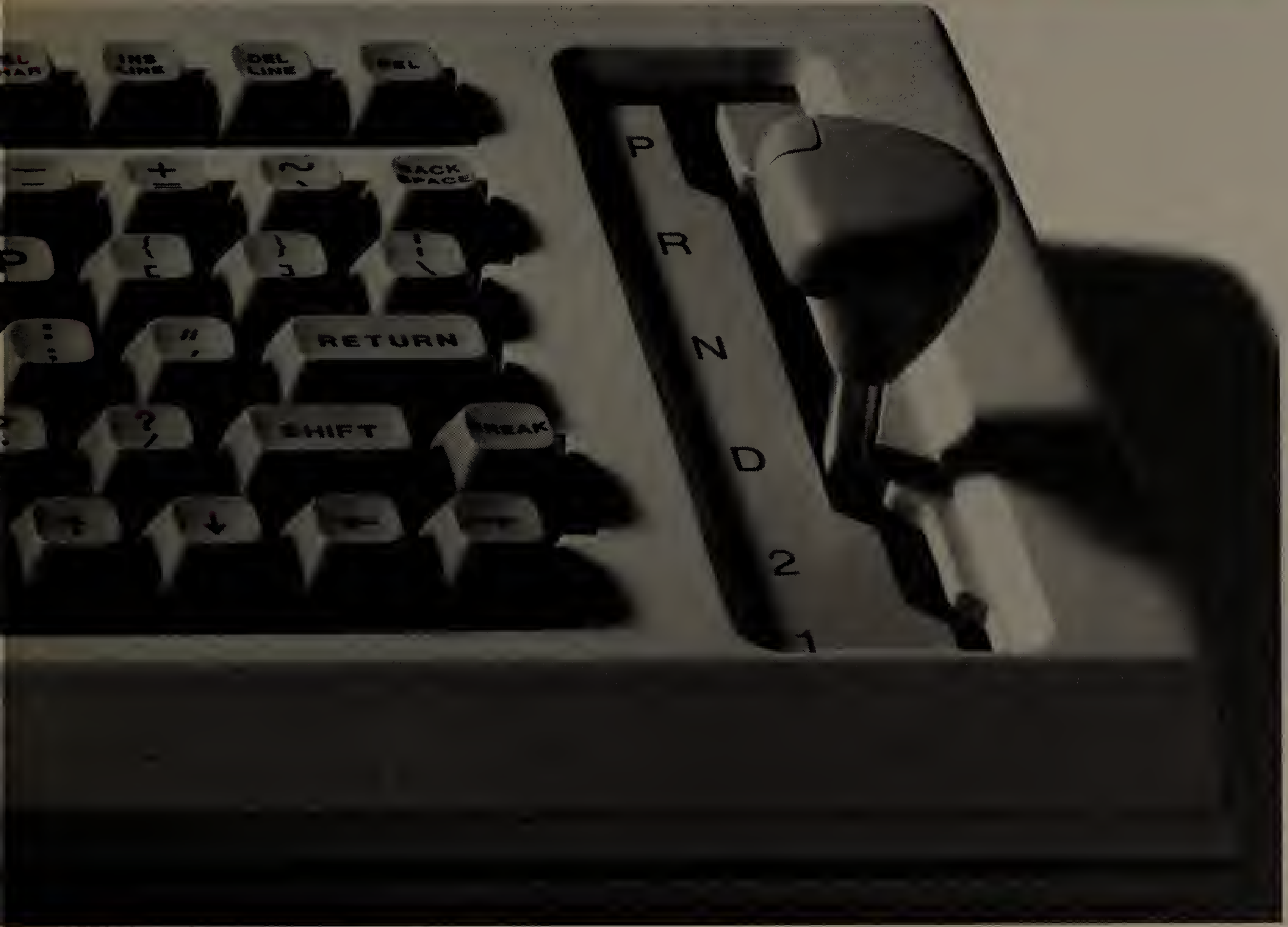
As with any business decision, the selection between these two alternatives depends on unique needs that vary from situation to situation.

Although cost is always important, it should not be the first consideration. Operational factors such as expected results, how data will be collected and allocation of capital and personnel are all more important. The user should check the vendor's references with an eye toward its reputation for reliability, consistency and professionalism.

When properly evaluated, planned and implemented, either a telemanagement service bureau or an in-house solution will provide the resources to support effective telecommunications management. And with plunging prices for software and hardware, it is easier than ever, even for small companies, to use this critical cost-control mechanism.

If the decision is made that a formalized telemanagement function is necessary but indecision persists about whether to go in-house or with a service, try the service. It is a low-cost way to get started.

Once the service's performance has been evaluated, the company can still bring the telemanagement function in-house. The transition can be an easy one, with the software system already in use at the service bureau available immediately for in-house use on a broad range of computers.



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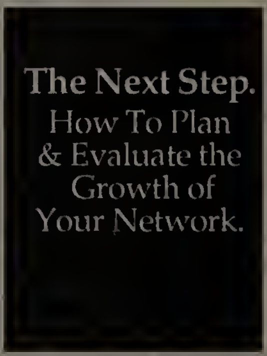

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*Data Communications, User Survey, December, 1988.

DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

> "Before the Gutenberg [press], information was the private property of the rich and powerful. Standards will be to technology what the printing press was to information. Technology will be made available to the democracy of users."

John Cramer
Vice-president of
segment marketing
Xerox Corp.
In a keynote address at the recent
North American MAP/TOP Users
Group Annual Meeting in
Memphis, Tenn.

Data Packets

Network Software Associates, Inc. (NSA) last week introduced for IBM Personal System/2s a plug-in board that combines a dual-speed synchronous modem and a multiprotocol Synchronous Data Link Control protocol converter.

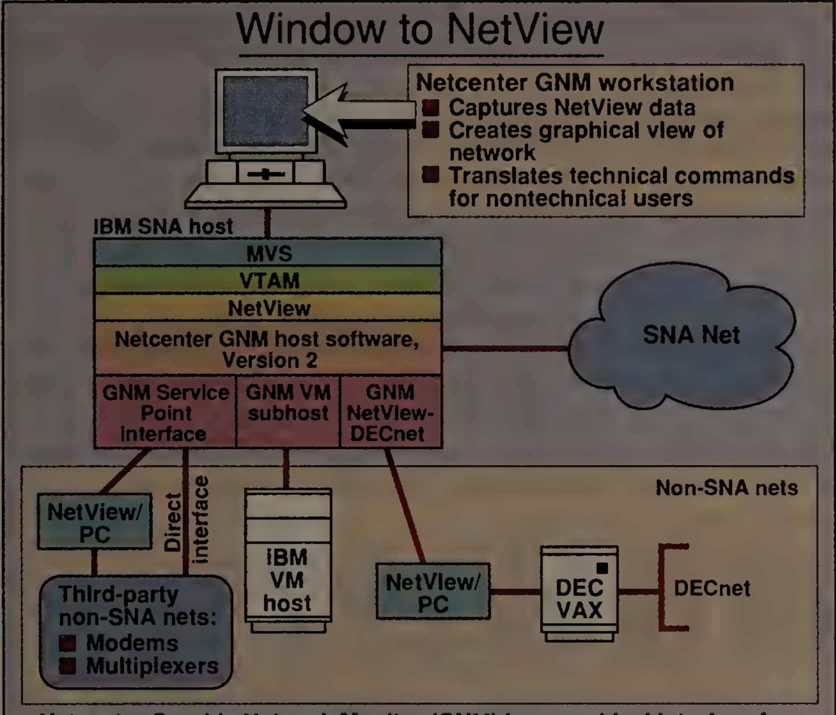
The new AdaptModem/2 Model 4800 for Micro Channel Architecture-based Personal System/2s eliminates the need for the microcomputers to be equipped with two separate modems and a separate SDLC adapter board.

The board is compatible with the 2,400 bit/sec Bell 201 standard and the 4.8K bit/sec Bell 208 standard. Used with NSA's AdaptSNA software, it supports major Systems Network Architecture protocols, including LU 6.2 Advanced Program-to-Program Communications, interactive 3270, batch remote job entry and user-defined LU 0.

Used with NSA's RemoteTalk software, the board lets Personal System/2 users talk to each other.

The board costs $1,195 and is available now. AdaptSNA software ranges in price from $245 to $785.

NSA is located at 39 Argonaut, Laguna Hills, Calif. 92656, or call (714) 768-4013.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GNM Service Point interface
GNM VM subhost
GNM NetView-DECnet
SNA Net
Non-SNA nets
NetView/PC
Direct interface
IBM VM host
NetView/PC
DEC VAX
DECnet
Third-party non-SNA nets:
Modems
Multiplexers

Netcenter Graphic Network Monitor (GNM) is a graphical interface for managing SNA nets via NetView. New options let GNM monitor non-SNA networks.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: US WEST NETWORK SYSTEMS, INC., BELLEVUE, WASH.

US West NSI upgrades GNM to support non-SNA nets

Net mgmt. graphics interface gets DECnet link.

By John Cox
Senior Editor

BELLEVUE, Wash. — US West Network Systems, Inc. (NSI) recently announced a new version of its graphical network management interface for IBM Systems Network Architecture environments that adds support for non-SNA nets.

New with Version 2 of Netcenter Graphic Network Monitor (GNM) are two optional programs, one that enables users to capture and display network management data from Digital Equipment Corp. DECnet networks and another that supports third-party devices such as modems and multiplexers.

> A third option will let the GNM gather VTAM data from domains controlled by VM hosts.

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A third option will let the GNM gather VTAM management data from network domains controlled by VM-based IBM hosts.

The first version of the GNM, available only on MVS mainframes, captures status and network alert data from VTAM, NetView or other IBM net management programs.

US West NSI also announced a joint development project with 3Com Corp. to create software that will let network administrators manage interconnected SNA and 3Com 3+Open LAN Manager local nets from a GNM workstation.

The software will enable SNA sites "to centralize and consolidate the network management of their entire data networks — LANs and all," according to George Haddix, president of US West NSI, based here.

The foundation

The GNM is a combination of MVS VTAM host software and workstation software — including Digital Research, Inc.'s Gem graphical user interface — running on an IBM Personal System/2 computer under DOS.

The GNM host program can capture network management data from VTAM and other programs such as NetView. The GNM transforms the data into pictures and maps, which are then displayed and manipulated on the workstation.

To extend the GNM's usefulness, US West NSI added three new options, which will be available in the third quarter.

One option is the GNM Service Point Interface (SPI), which is new code for the GNM host program that supports IBM's SNA Management Services Architecture, including the NetView/PC Service Point Command Facility. Tim Williams, US West NSI's director of marketing, said this means that the GNM can capture event and alarm data sent to NetView by any third-party net device that supports NetView/PC.

Similarly, the new version of GNM will be able to collect management data from any IBM products that support the manage-

(continued on page 16)

CPI-C key to tying non-IBM units, SNA

IBM interface designed for SAA is now being used as an API for a range of other networks.

By Paul Desmond
Staff Writer

IBM's Common Programming Interface-Communications (CPI-C) is emerging as an important element not only in IBM's Systems Application Architecture (SAA) and OSI strategies, but also for third parties seeking to tie non-IBM processors into SNA networks.

CPI-C was originally designed to give applications portability within IBM's SAA. But it is now shaping up as an application program interface (API) for the emerging Open Systems Interconnection transaction processing standard and for Transmission Control Protocol/Internet Protocol nets.

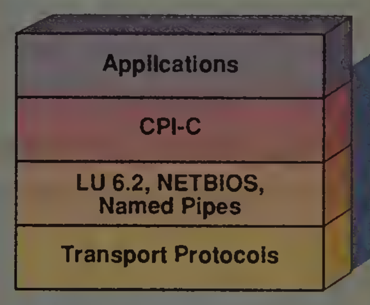
In addition, third-party vendors are making plans to use CPI-C in products that will allow application portability among IBM and non-IBM processors, such as those from Data General Corp. and Digital Equipment Corp.

CPI-C was announced in 1987 as a common application interface to IBM's Systems Network Architecture LU 6.2 protocol, said Julie Fernane, manager of LU 6.2 architecture at IBM.

The idea was to make it possible to port applications written to CPI-C from one processor to any other supported within SAA, which includes System 370 mainframes running MVS or VM; Application System/400 minicomputers; and Personal System/2s under OS/2 Extended Edition. Those processors could then run distributed applications using the LU 6.2 protocol.

Vendors such as DG, however, expect to be able to use CPI-C

(continued on page 16)



IBM's Common Programming Interface - Communications (CPI-C) is intended to be an application programming interface that will work with various session-to-session and transport protocols.

SOURCE : IBM, RALEIGH, N.C.
GRAPHIC BY SUSAN J. CHAMPENY

New group set to bolster object mgmt. technology

By John Cox
Senior Editor

FRAMINGHAM, Mass. — American Airlines, Inc. and 10 computer vendors recently formed an international group to apply an emerging technology called object management to applications in multivendor networks.

The goal of the Object Management Group (OMG) is to create an application environment in which workstation users, equipped with a mouse, can easily access applications that are themselves designed to interact without the user's knowledge, according to OMG members.

"As a user, I would be able to access multiple applications on my workstation and on various hosts in a multivendor network without having to know command languages, communications protocols or the different architectures of the systems involved in the network," said Christine Wallis, sector marketing manager for work group computing at Data General Corp. DG is one of the 11 founders of OMG.

The key to that type of environment is object technology, a way of writing programs as independent standard modules, or objects, that a common Object Management Facility (OMF) can unite, coordinate and manipulate, according to Ruanne Ernst, director of marketing for the information systems group at Hewlett-Packard Co. in Cupertino, Calif.

Object-oriented applications and their users can ignore the complexities traditionally associated with making different applications work together, she said. The result will be that more people will be able to use more applications in a network.

Because object programming, in effect, insulates application code, changes in one application — for example, a new object-oriented version of Lotus Development Corp.'s Lotus 1-2-3 — will no longer require corresponding

(continued on page 49)

CPI-C key to tying non-IBM units, SNA

continued from page 15

not only with LU 6.2, but also with Network Basic I/O System and Named Pipes. They contend that CPI-C, which is an application-layer protocol, will be able to work with other lower layer protocols, thereby easing the task of getting data from one processor to another (see chart, page 15). CPI-C does not address how the data is processed once it arrives at its destination.

For now, CPI-C is available only in VM SP Release 6, which began shipping last October, Fernane said. But IBM has big plans for CPI-C.

"CPI-C will be IBM's strategic communications interface to SNA LU 6.2 and OSI, and the direction is to provide that for other protocols as well," Fernane said. Those other protocols include TCP/IP, she said, although she declined to detail a time frame for CPI-C support in any of the additional environments.

"What IBM is trying to achieve with CPI-C sounds very doable," said David Passmore, a principal at Network Strategies, the Fairfax, Va.-based telecommunications consulting practice of Ernst & Whinney. "There's not too much difference between the OSI and the LU 6.2 APIs. It shouldn't take much to bridge those."

A helping hand

To help others trying to write applications with CPI-C interfaces, IBM last June published a CPI-C reference manual, Fernane said. In addition, vendors can license CPI-C from IBM and include the interface in their own products, she said.

IBM is also negotiating with X/Open, a consortium of vendors seeking to develop a common applications environment, based on de facto and international standards, that will allow applications portability among various vendors' hardware and software.

"They are looking at using CPI-C as the interface that they will document for connecting SNA with Unix," Fernane said. That would allow users to port SNA applications to Unix-based processors, she said.

Some other vendors are already at work on products that incorporate CPI-C.

DG is working on a CPI-C interface for its Eclipse MV/Family of minicomputers. Users and third parties can use the interface when developing applications that communicate with IBM processors, said Joseph Clabby, manager of communications marketing at DG. Ultimately, writing an application to CPI-C will let that application work with any other processor that supports the CPI-C interface, he said.

"If you write an application to CPI-C, it can run over LU 6.2, NETBIOS or whatever else you choose to plug in under CPI-C," Clabby said.

A second vendor depending on CPI-C is Intel Corp., which is working on a new version of its SNA Passthrough software that will incorporate CPI-C, according to Mark Smith, network product line manager for Intel's Systems Interconnect Operation.

SNA Passthrough lets two mainframes communicate VTAM-to-VTAM, via any type of logical unit session, over Ethernet ("Intel unveils pack that lets mainframes talk via E-net," *NW*, May 1).

Future versions will let processors such as DEC VAXes, personal computers and Unix-based machines communicate with SNA networks via an LU 6.2 session with a mainframe, Smith said. The LU 6.2 interface used will be CPI-C, he said.

"If someone's written a CPI-C program on a VM system in C, for example, they can pick it up, put it on a VAX, recompile it and the same CPI-C calls will apply," Smith said.

"CPI-C is consistent wherever you find it. You write a program to CPI-C on one system and it takes identical calls on any other system," Smith said.

Smith said he expects products that incorporate CPI-C will be available by the second quarter of next year. ◪

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US West NSI upgrades GNM to support nets

continued from page 15

ment architecture, such as the Token-Ring LAN Manager and the Rolm CBX 9751, Williams said.

Finally, the SPI option will also interface with applications that support Network Message Vector Transport (NMVT), a format for generic alert information from non-SNA networks, he said. This capability lets the GNM interface directly to non-SNA management systems that use NMVT.

The second option is the NetView-DECnet Interface. This option is actually the company's own implementation of the SPI for DEC's DECnet architecture. US West NSI engineers wrote code for a VAX that passes DECnet event and alert data through a NetView/PC interface to a host NetView package, where it is then sent to a GNM workstation. The third option, VM Subhost/SNA, is a program that runs on VM hosts. This program lets VM computers pass VTAM or NetView data to the GNM program on an MVS host.

GNM Version 2 is priced for a single license (which includes one copy of the MVS code and two copies of the workstation code) at $39,500. The SPI option costs $9,500, the DECnet option costs $12,500, and the VM subhost option costs $17,500. The US West NSI-3Com software will be available in the fourth quarter. Pricing has not yet been determined.

GNM Version 2 also incorporates several improvements, among them features designed to support an IBM format for generic alerts and to help operators more easily see changes in network status.

US West NSI can be contacted at 14335 N.E. 24th St., Suite 222, Bellevue, Wash. 98007; (800) 252-4224. ◪

West Coast Bureau Chief Susan Breidenbach contributed to this story.

LOCAL NETWORKING

PC AND TERMINAL-TO-HOST LANS, GATEWAYS AND MICRO COMMUNICATIONS PRODUCTS

Worth Noting

"Currently, most users have little justification to migrate to NetWare 386 because they still have small nets of under 20 nodes."

Steve Plotkin
Vice-president
Real World Systems Co.
A systems integrator
and Novell, Inc.
value-added reseller
in Philadelphia

Netnotes

Novell, Inc. recently introduced a new software maintenance program that entitles users of its NetWare network operating system to upgrades for the duration of their contracts.

The NetWare Assurance maintenance program, available now, carries a fixed yearly fee as opposed to charging on an upgrade-by-upgrade basis, said James Bills, executive vice-president of Novell's sales and service group.

A one-year NetWare Assurance maintenance contract for ELS NetWare Level II costs $495.

A contract for Advanced NetWare is priced at $995, and a maintenance agreement for SFT NetWare costs $1,495.

Kimtron Corp. is now shipping software drivers that enable its MultiProcessor Solution (MPS) terminals to run as workstations on Novell, Inc. NetWare local networks.

The MPS consists of a terminal, Kimtron's K-Slave card and a cable that connects the two. The K-Slave — a personal computer on a board that has its own microprocessor and up to 1M byte of memory — is plugged into the bus of Kimtron's network server or remote bridge server along with other K-Slaves.

The new NetWare driver is included with Kimtron's MPS60 and MPS62 models and can be purchased as an upgrade to Kimtron personal computers for $99.

The MPS62 includes a KT-220/PC terminal that can double as a Digital Equipment Corp. VT-220 display.

Kinetics pack makes Unix host into Macintosh server

Mac users gain advantages of bigger systems.

By Susan Breidenbach
West Coast Bureau Chief

WASHINGTON, D.C. — Excelan, Inc.'s Kinetics division introduced software at MacWorld D.C. here last week that enables a Unix host to act as a file server for Macintosh workstations.

Called K-Share, the product runs on Sun Microsystems, Inc.'s Unix-based systems and on Digital Equipment Corp. VAXes running Ultrix. It makes these hosts look like a Macintosh-based AppleShare server to an Ethernet-connected Macintosh workstation, providing Macintosh local networks with a more powerful server option.

Macintosh work groups can store shared applications and data files on the Sun and DEC hosts, taking advantage of the larger disk capacities and better file backup facilities associated with these systems.

K-Share also includes Kinetics' K-Spool print management software, which resides on the Unix host and provides Macintosh users with host-based print spooling and other printer services. For example, the Macintosh network administrator can use these services to categorize printers in logical or geographic subgroups, create groups of users with varying printer access rights and track printer usage.

Conversely, Unix users on a K-Share network can tap into the Adobe Systems, Inc. PostScript-based printing capabilities of the Macintosh environment.

The Macintosh users can also access data stored under Sun's Network File System (NFS) protocol, which is part of both Sun's and DEC's versions of Unix. NFS provides a uniform way to store files on a network of dissimilar computers, making data anywhere on the network appear to be local.

On a K-Share network supporting both Macintosh and Unix systems, this means Unix files will look like Macintosh data to Macintosh users and vice versa.

According to Steve Nelson, director of advanced planning for Excelan, K-Share eliminates the need for a gateway between the environments, giving Macintosh users a direct Ethernet link to Unix hosts. However, work groups of Macintoshes on AppleTalk subnetworks can be attached to the Unix system via Kinetics' FastPath Ethernet gateway.

In such an environment, the FastPath gateway will operate faster because it is dedicated to

(continued on page 18)

Madge announces speedy 4M token-ring interfaces

By Laura DiDio
Senior Editor

CHICAGO — Madge Networks, Ltd. recently introduced two 4M bit/sec token-ring interfaces that it claims are up to 60% faster and consume 90% less microcomputer memory than comparable IBM offerings.

The Madge Smart AT Ring Node is designed for use with IBM Personal Computer ATs and compatibles, and the Madge Smart MCA Ring Node is designed for Micro Channel 80386-based machines. Both adapters support Novell, Inc.'s NetWare, 3Com Corp.'s 3+Open, IBM's PC LAN Program and Madge Networks' proprietary NetServer.

The interfaces are based on the Texas Instruments, Inc. token-ring chipset and feature 128K bytes of on-board random-access memory to support Network Basic I/O System and data transfer protocols. Embedding NETBIOS software directly in the interface frees up microcomputer memory for user applications, said Robert Madge, president of the company.

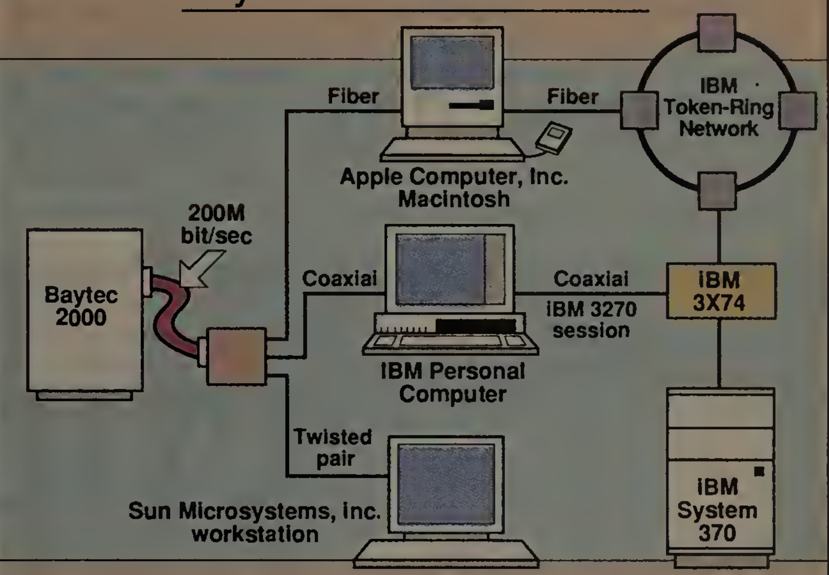
He said the NETBIOS interface uses only 3K bytes of microcomputer memory. "By contrast, IBM Token-Ring adapters require 30K to 35K bytes of memory to produce the same DOS and [NETBIOS Extended User Interface] protocol interfaces," Madge said.

IBM 4M bit/sec adapters feature 8K or 16K bytes of RAM and require the purchase of additional software — the LAN Support Program — to support its NETBEUI and data transfer protocols. The LAN Support Program costs about $50, and IBM's 4M bit/sec adapters cost $650.

Memory consumption is an issue of increasing concern to users. While most systems are equipped with enough memory to run memory-intensive programs such as Microsoft Corp.'s Excel spreadsheet, which requires 40K bytes of DOS memory, users of-

(continued on page 18)

Baytec's bus-based LAN



The Baytec 2000 local network uses a 200M bit/sec small computer systems interface extended bus structure to connect network nodes.

GRAPHIC BY SUSAN J. CHAMPENEY SOURCE: BAYTEC, INC., LIVONIA, MICH.

Baytec net designed for mix of micros

Baytec 2000 uses the small computer systems interface to link DOS, Unix, Mac workstations.

By Susan Breidenbach
West Coast Bureau Chief

LIVONIA, Mich. — Baytec, Inc. recently announced a computer network that uses the small computer systems interface (SCSI) to transfer data among dissimilar microcomputers at rates as high as 200M bit/sec.

Targeted initially at the computer-aided design and manufacturing market, the Baytec 2000 is a "network in a box" that can support any mixture of DOS, Unix, Xenix or Macintosh workstations. As many as 56 workstations can be attached to one Baytec 2000, and multiple units can be daisy-chained together to create high-speed networks with an unlimited number of nodes.

Warren Bohlman, president of CAD/CAM On-Line, Inc., said the Baytec 2000 will outperform an Ethernet or token-ring network with a traditional file server "by a factor of at least 10 to 1. It's a minimainframe in a box the size of a file cabinet." Bohlman's company, a CAD systems integrator in Chatsworth, Calif., that caters to aerospace firms, was a beta-test site for the product.

The Baytec 2000 is a parallel processor with a 22-slot SCSI backplane that can accommodate as many as eight SCSI controllers. Each of the controllers can support seven workstations equipped with SCSI ports.

Workstations are attached using a multimedia adapter unit and dual-coaxial, fiber-optic or twisted-pair cable. The workstation views the net as an SCSI-compatible device and is about as easy to install as an external disk drive.

There is no network operating system. Rather, configuration and management software, tape-backup utilities, and printer and plotter spooling are incorporated in firmware on the interfaces. File sharing is controlled by a workstation-based program that supports DOS 3.1 record locking.

Each Baytec 2000 can be configured with up to 9G bytes of hard disk storage.

CAD/CAM users sharing huge graphics files are an obvious target for the Baytec 2000 because of the large amount of bandwidth it offers. However, Baytec President John Brunk said that from a technological viewpoint, the potential customer base for the Baytec 2000 is broad because it is implemented at the data-link level, not the network level, of the seven-layer Open Systems Interconnection model.

"When we began our initial research for the product back in 1986, it was clear to us that the computing environment of the 1990s was going to be made up of multiple types of networks running different network operating systems and supporting a variety of workstations," Brunk said.

"By coming in at the data-link layer, we can be compatible with systems up at the network layer and provide a high-speed, wide-area backbone for all kinds of LANs, minicomputers and mainframes," he said.

Workstations can be used as gateways to these other environments. For example, CAD/CAM On-Line equipped one of its nodes with a 3270 adapter connected to an IBM 4341 mainframe. Files that need to be

(continued on page 18)

Baytec net for mix of micros

continued from page 17

moved between the mainframe and the net can be passed through this workstation's 3270 port.

A client that wanted to migrate 6,000 CAD drawings from a mainframe to a microcomputer platform merely delivered them on tape to CAD/CAM On-Line. CAD/CAM On-Line had the task of moving all the files to microcomputer floppy disks, a process that took a couple of weeks before the company beta-tested the Baytec 2000, Bohlman said. "With the Baytec 2000, we were able to transfer 6,000 files in minutes." Bohlman said his company uses the SCSI network for office automation and accounting, not just CAD tasks.

Another CAD shop that did extensive beta-testing of the Baytec 2000 is Waltonen Engineering Services, Inc., a company in Madison Heights, Mich., that designs manufacturing tooling for the automotive industry.

Waltonen was looking for a network that could be managed without the help of a network specialist and could exchange graphics files of 3M to 5M bytes with off-site mainframes at client sites. Also, the company's DOS-based CAD package used up almost all of the 640K bytes of workstation memory and didn't leave much space for a network operating system.

James Susor, CAD/CAM development manager for Waltonen Engineering Services, said the Baytec 2000's speed was the main attraction, but he also gave it high marks for flexibility.

"I look at [network operating systems from] Novell and 3Com [Corp.] as file cabinets with prelabeled files and tabs," Susor said. "The Baytec is an empty file cabinet, and I can set it up any way I want."

The Baytec 2000 is available now through Baytec distributors and value-added resellers. Prices for the base unit depend on configuration and start at $16,995, plus $495 for each node interface.

Kinetics makes host into server

continued from page 17

network routing functions, Nelson said. The file translations that the gateway must do in a traditional AppleTalk-to-Ethernet connection are handled by the Unix host.

Kinetics said K-Share is a full implementation of the Apple Filing Protocol (AFP), Apple Computer, Inc.'s file-server protocol. The client piece of AFP, called AppleShare, is included in the Macintosh operating system.

K-Share is priced at $795 and is scheduled for release in the third quarter of this year.

Madge's speedy interfaces out

continued from page 17

ten want to run concurrent Terminate and Stay Resident programs in conjunction with spreadsheets.

"Users could find that their machines fail to run their applications because the system lacks enough available DOS memory," Madge said.

When used in servers, Madge Networks' Smart Ring Nodes with 128K bytes of RAM will enable the servers to support more network workstations. When used in a workstation, the 128K bytes of RAM on the Smart Ring Nodes make it possible to support more concurrent network sessions.

One beta-test user who chose the Madge Smart Adapter over the IBM adapter precisely for its memory savings is London's H.M. Treasury, England's equivalent of the U.S. Treasury. H.M. Treasury has several IBM 4M bit/sec Token-Ring Networks with a total of 200 nodes that are connected to two IBM 4381 mainframes.

"We use the networks to do mathematical equations and number crunching in order to analyze and forecast economic trends," said John Wailing, H.M. Treasury's network manager. "We're running DOS, and the great attraction of the Madge Smart adapters was that they saved us so much memory."

The Madge Smart AT Ring Node costs $795, and the Smart MCA Ring Node is priced at $895. Both are available now.

For more information, contact Madge Networks at 534 Salem Ave., Roanoke, Va. 24016, or call (703) 982-0638.

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Worth Noting

"The whole idea of organizational change from communications systems is just emerging in the minds of academics and consultants. I don't think it's emerged yet in the minds of executives."

Tom Davenport
Associate professor
Harvard University
Business School
Cambridge, Mass.

Association Watch

The **Communications Managers Association (CMA)** will hold its next Business Meeting/Educational Session on May 24 at the Marriott Marquis in New York. Elections will be held to fill positions on the board of directors for the 1989-1990 term.

Also at the meeting, the CMA will present the second of its two-part series, "Update on Private Branch Exchange Technology and Applications."

For further information, call the CMA at (201) 776-3824.

The **National Automated Clearing House Association (NACHA)** recently announced six new members of its NACHA Affiliate Membership Program.

The new members are: Automatic Data Processing Tax Center, San Dimas, Calif.; E.I. du Pont de Nemours & Co., Wilmington, Del.; First Data Resources, Inc., Omaha, Neb.; Harbinger Computer Services, Atlanta; NaBanco, Fort Lauderdale, Fla.; and Sibs-Sociedade Interbancaria de Servicios, S.A., Lisbon, Portugal.

NACHA's Affiliate Membership Program gives its members the opportunity to influence the direction of the Automated Clearing House network.

For more information, call (703) 742-9190. ◼

Rules to conference by

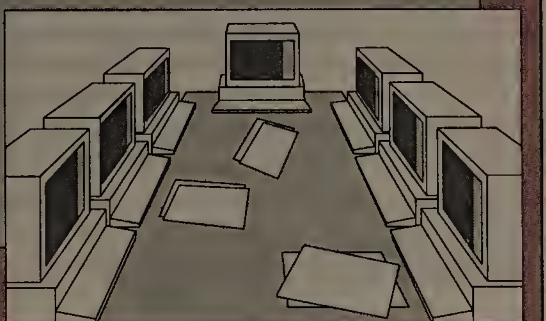
Excerpts from the rules for IBM's internal computer conferencing system

The conferencing system is intended for peer-to-peer communications. It is not a substitute for official communications channels.

The system is not to be used for personal (nonbusiness-related) requests for information or for discussion of religion or politics.

Submissions should be expressed with accepted business courtesy and good taste.

- No ethnic slurs, personal insults or obscenities.
- No letter-writing campaigns.
- Use of sarcasm and irony is strongly discouraged.



GRAPHIC BY SUSAN J. CHAMPENEY HARVARD UNIVERSITY BUSINESS SCHOOL, CAMBRIDGE, MASS.

IBM managers curb abuse of computer conferencing

Inappropriate use of messaging prompts action.

By Barton Crockett
Senior Editor

CAMBRIDGE, Mass. — Some feathers were ruffled within IBM when employees used the computer maker's electronic conferencing systems in ways that managers considered inappropriate.

According to a recent Harvard University Business School case study called "IBM Computer Conferencing," IBM managers became concerned when personal and confidential comments began appearing on internal computer conferencing systems designed to let work groups swap technical data, messages and software.

> "The anonymity of computer conferencing makes people much more uninhibited," said Davenport of Harvard Business School.
>
> ▲▲▲

Their concerns led IBM to explore ways of regulating the use of the conferencing systems. The company's experience illustrates a common problem encountered by users of corporate messaging systems: They encourage people to say things they would never say in person, according to Tom Davenport, senior research associate at Harvard Business School here.

"The anonymity of electronic messaging systems, like computer conferencing, makes people much more uninhibited," Davenport said. "In hierarchical organizations like IBM, this can make some people upset."

According to the case study, computer conferencing is widely practiced at IBM. Electronic conferences are typically supported by IBM mainframes that users may access through the company's internal communications network. The conferencing systems complement IBM's extensive internal Professional Office System-based electronic mail network, offering a method by which information can be easily shared.

IBM is one of the first companies in the computer industry to embrace computer conferencing, according to the study. IBM first developed computer conferencing systems in the early 1980s, and by 1988, there were more than 300 conferencing systems in place.

Managers at the company said they believe conferencing systems have helped move the company closer to a truly paperless office environment, the study reported. By 1986, according to one manager, the number of messages sent through E-mail and computer conferencing systems exceeded the number of internal telephone calls.

"Although not quantified, productivity gains for users and support groups [from computer conferencing systems] were widely claimed," the study said.

Getting upset

Despite the positive effects, many managers were concerned about some of the dialogue carried over these systems.

IBM managers quoted in the report said they were concerned about employees swearing on the systems or making disparaging comments about IBM or its com-

(continued on page 20)

IS execs shift focus to net architectures

Decentralized computing dictates emphasis on connectivity standards to further business goals.

By Wayne Eckerson
Staff Writer

Senior information systems executives are devoting greater attention to the development of network architectures that can help companies fulfill their business objectives.

The rising tide of decentralized computing and end-user assertiveness has made it virtually impossible for information systems managers to maintain tight control over a company's computer and information resources. As a result, enlightened computer executives have relinquished control over these systems and instead are focusing on the networks that connect them, according to top computer executives and consultants interviewed by *Network World*.

"I have said for 15 or 20 years, 'Let me have responsibility for the corporate network and before long I will have control over the company's information systems,' " said Jack Hancock, vice-president of systems technology at Pacific Bell in San Ramon, Calif. Hancock oversees Pacific Bell's internal network.

Many information systems executives now believe their job is to establish connectivity standards and work with end users to develop network interfaces for departmental applications and systems. The days of dictating hardware purchases and controlling software development are gone, they said.

"[Chief information officers] can't mandate the hardware and software users buy, but they can mandate the family jewels: interoperability standards," said John Konvalinka, who is CIO and managing partner at Arthur Andersen & Co., an accounting and consulting firm in Chicago.

Konvalinka said information systems managers need to create a single, corporatewide network that connects all users. The network would be based on uniform standards, but users would be allowed to pick and choose the applications and hardware that best suit their needs, he said.

Many companies are saddled with multiple, redundant net-

(continued on page 20)

GUIDELINES

BY WAYNE ECKERSON

Techniques for improving etiquette in E-mail

Computer literacy may be on the rise, but it seems users are still rather oafish when it comes to the etiquette of electronic communications.

That's the argument made by Norman Shapiro and Robert Anderson in their handbook *Toward an Ethics and Etiquette for Electronic Mail*, published by Rand Corp., a think tank based in Santa Monica, Calif. The authors set forth guidelines to help E-mail users avoid committing serious social and professional gaffes when sending and receiving electronic messages.

Most of the etiquette problems associated with E-mail stem from what the authors call "flaming," or the tendency of users to inject emotion into their electronic messages. In some cases, this emotion — whether sarcasm, irony or anger — may be misconstrued by the recipient of a message, causing unintended offense or misunderstanding, they said.

Electronic communications lacks the verbal cues and gestures that help convey meaning in face-to-face or telephone conversations. Most people do not write well enough to express themselves clearly and unambiguously in electronic messages, and thus court disaster, the authors said.

Accordingly, the first rule of E-mail etiquette is: "If you must express emotion in a message, clearly label it."

Shapiro and Anderson recommend putting a tip-off word or symbol in parentheses after writing something emotional in a message. This would help the reader recognize when a statement is joking, half-serious or is expressing a strong

(continued on page 20)

Techniques for improving etiquette

continued from page 19

reaction to a recent event or opinion.

The need to label emotion in an electronic message is important for other, more long-term reasons, the authors say.

"The message might reside indefinitely on a disk file or tape archive and can therefore be recalled," they write. "Through the miracle of computer networking, it can reside on computers elsewhere in the world that you don't know about, having been forwarded there without your consent."

Clearly, the message is to message with caution.

While the purpose of the handbook is to improve the etiquette of E-mail users, technology, in the long run, may save users in spite of themselves. E-mail systems of the future will combine media elements that allow users to communicate emotional opinions without ambiguity, according to the authors.

For example, future E-mail systems may communicate anger or strongly felt opinions by adjusting the boldness of letters appearing on a computer screen according to how hard the user hits the keys while typing. The angrier the message, the bolder or brighter the message's lettering would appear on the recipient's screen.

The authors offer these guidelines for sending messages:

- If you must express emotion in a message, clearly label it.
- Separate opinion from nonopinion, and clearly label each.
- Identify yourself and your affiliations clearly.
- Don't insult or criticize third parties without giving them a chance to respond.
- Create single-subject messages whenever possible.
- Assume that any message you send is permanent.
- Be selective in broadcasts for information.

In receiving and responding to messages, the authors offer these recommendations:

- Avoid responding while emotional.
- If a message generates emotion, look at it again before responding.
- If you receive a message intended for another person, don't just ignore it.
- Assume honesty and competence on the part of the sender. ◪

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IS execs shift focus to net architectures

continued from page 19

works, often the result of a merger or acquisition, or of an independent-minded division that has built a stand-alone local network, Konvalinka said. In these cases, top information systems professionals who have established clear network policies and standards will be better able to orchestrate the joining of the nets, he said.

The ultimate success of an information systems executive, however, depends on how well the net architecture supports the firm's overall business objectives, said Walter Ulrich, a communications consultant at Coopers & Lybrand in Houston.

George Kenney, CIO and senior vice-president of the American Stock Exchange, Inc. in New York, agreed that corporate networks must be designed with business objectives in mind if technology is to be used as a strategic weapon. "My mission is to make sure technology plans are driven by business plans," he said.

To that end, Kenney, who assumed his position last year, is redesigning the exchange's network to reflect the needs of the exchange and the brokers and traders who work there. Last fall, he spent several months talking with top-level executives, traders and brokers in an effort to define a clear mission statement for the corporate network architecture.

Acting on that information, Kenney decided to build a fully distributed on-line order processing system that he said will improve the exchange's competitiveness and allow it to better serve its customers.

To develop a net architecture that reflects corporate objectives, managers must be able to combine business sense with a strong knowledge of technology. Most, however, come from either business or technology backgrounds and need formal training or new job experiences to bridge the gulf between the two, Konvalinka said. ◪

IBM managers curb abuse of conferencing

continued from page 19

petitors. Confidential information about such things as unannounced employee transfers also appeared on the systems. One manager quoted in the report said an IBM employee was suspended from using computer conferencing for one year because of inappropriate remarks made on one system.

New policy

Because of these complaints, IBM managers decided to create a new policy governing computer conferencing, the study said.

Meetings were held to devise rules for use of the systems, and managers began to closely monitor the messages posted in conferencing systems.

An official set of rules (see graphic, page 19) for computer conferencing was published in September 1988 and continues to be revised today, according to Gerald Wauldbaum, manager of advanced workstations and services at IBM.

"Up until now, some of the IBM conferences have been fairly loose in their management," said one IBM manager quoted in the study. "But we think it's time to step up and take a stand — a stand that will ensure that the conferences' benefits can continue while the problems and risks are minimized." ◪

PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

Worth Noting

Next week: A *Network World* Telecom Buyer's Guide looks at the features and advantages of virtual network services offered by AT&T, MCI Communications Corp. and US Sprint Communications Co.

First Look

Switch enables fax, phone to share line

MaxTrek recently introduced a switch that allows a facsimile machine and a phone to share a single telephone line.

Called **SmartMax Phone Autoswitch,** the unit automatically routes incoming facsimile messages to a facsimile machine and voice calls to a telephone. The switch saves users the cost of supporting a separate phone line to handle facsimile transmissions.

The SmartMax operates in automatic or manual mode. Automatic mode transfers calls to either a facsimile machine or a telephone depending on the nature of the call. In manual mode, users can lock the phone line to receive only phone calls or facsimile messages. A transfer button on the unit's front panel allows users on an incoming phone call to switch the phone line to receive an incoming facsimile.

The SmartMax has three RJ-11 jacks. Two RJ-11s support twisted-pair lines from the facsimile machine and phone, and the other links the unit to the wall jack.

The unit sells for $245 and is available now.

MaxTrek, 2000 Powell St., Suite 1290, Emeryville, Calif. 94608, or call (415) 658-1162.

System lets callers retrieve data

The Automated Group, Inc. recently announced a

(continued on page 22)

Racal-Milgo adds to net mgmt. line

By Jim Brown
New Products Editor

DALLAS — Racal-Milgo used the International Communications Association's 42nd Annual Conference and Exposition here last week to add a new model to its line of Communications Management Series (CMS) network management systems.

Designed to manage and control Racal-Milgo data communications equipment in point-to-point or multipoint networks of analog or digital leased lines, the CMS 4500 is based on a Digital Equipment Corp. MicroVAX running Unix.

The CMS 4500 complements Racal-Milgo's other CMS products, including its DEC PDP-11-based CMS 2000.

The CMS 4500 uses IBM Personal System/2 Model 30 microcomputers emulating Tektronix, Inc. 4105 graphic display workstations. Alternating DEC VT-320 terminals can be used as operator consoles. The Personal System/2s run Microsoft Corp. Windows software, enabling an operator to view multiple windows on a single screen. Racal-Milgo proprietary software on the MicroVAX enables DEC VT-320 users to toggle between multiple screens.

The CMS 4500 also comes with a Panasonic Industrial Co. KX-P1595 black ink or Tektronix 4696 color printer and an integral Oracle Corp. relational data base management system that enables users to store equipment inventories, device configuration data and historical alarms.

Working with stand-alone Racal-Milgo Diagnostic Communications Multiplexers (DCM) and Intelligent Communications Processors (ICP), a CMS 4500 can monitor and control as many as 8,190 remote devices attached to up to 512 central-site Racal-Milgo modems, multiplexers and data service units.

In a typical configuration, the diagnostic port of a central-site device is connected to a port on a DCM. Each DCM can support as many as 16 central-site devices. Up to eight fully configured DCMs can be attached to an ICP via RS-232 links. Up to four ICPs can be linked via RS-232 to the MicroVAX.

The CMS 4500 supports automated alarm management and command lists, which are a series of commands that can be automatically invoked once a specified alarm has been received. For instance, CMS 4500 will instruct remote devices to change speed settings when error rates exceed a user-defined threshold.

CMS 4500 can pass alarms via IBM NetView/PC to IBM's host-based NetView network management software. Racal-Milgo said it is also working to make CMS

(continued on page 22)

AT&T Paradyne upgrades Acculink T-1 multiplexers

LARGO, Fla. — AT&T Paradyne recently enhanced the operating system of its Dataphone II Acculink T-1 multiplexer to support improved recovery capabilities and introduced new features such as adaptive differential pulse code modulation (ADPCM) and subrate data multiplexing.

The upgraded software runs on the Acculink 740, which supports a single redundant T-1 link, and the Acculink 741, which supports as many as 16 T-1 links.

The software supports Fixed Routing with Automatic Restoration, an option that enables users to define alternate routes to replace primary links in the event of a failure. The routing software will automatically pick a route if both the primary and alternate lines have failed. Previously, the routing software automatically picked a route only when primary lines failed.

A new Enhanced Facility Fault Recovery option enables users of both products to instruct the multiplexer to wait up to 60 seconds following a line failure before reconfiguring the network.

In the past, the multiplexers automatically reconfigured the network when a primary line went down for more than 2½ seconds, even if the line restored itself within 60 seconds. The new feature helps users avert unnecessary reconfigurations.

The software also provides a clear channel capability that enables users to transmit data at the full DS0 rate of 64K bit/sec.

This option uses bipolar eight zero code substitution, which is used when a string of binary zeros exceeds the DS0 format limits for consecutive transmission of binary zeros. B8ZS translates these strings into a special code.

The upgrades will be included with new Acculink 740 and Acculink 741 models. Current users will be able to purchase an upgrade but the company has not yet set pricing.

(continued on page 22)

Latest Irma supports ISA, Micro Channel

Compatibility with Big Blue software enables DCA to market board to IBM terminal-emulation users.

By Jim Brown
New Products Editor

ALPHARETTA, Ga. — Digital Communications Associates, Inc. recently unveiled a new version of its Irma terminal-emulation board that is compatible with the existing Industry Standard Architecture (ISA) bus in IBM Personal Computers as well as with IBM's new Micro Channel bus.

The Irma 3 Convertible board supports DCA's Irma software and the emulation software that IBM provides with its 3278/79 Emulation Adapter. Earlier versions of Irma were not compatible with IBM terminal-emulation software.

Making Irma 3 compatible with IBM software will enable DCA to sell its board to users with IBM terminal-emulation software, which is now also included in IBM's OS/2 Extended Edition, said Doug Lifton, DCA's senior product manager.

Personal Computers outfitted with Irma 3 can be connected to an IBM 3274, 3174 or 3276 cluster controller via coaxial cable or twisted-pair wire. Irma 3 makes a stand-alone Personal Computer or Personal System/2 appear to an IBM host as an IBM 3278 or 3279 terminal.

Emulation session support

Irma 3 supports both Control Unit Terminal mode, which provides a single emulation session, and Distributed Function Terminal (DFT) mode, which supports multiple emulation sessions.

Users can order Irma 3 preconfigured for either the ISA or the Micro Channel bus and, if needed at a later date, the board can be manually adapted to fit either bus. DCA said it has filed for a patent on the dual-bus technology and has not decided if it will license it to other board makers.

DCA last week also enhanced its E78 Plus and Windowlink for Irma terminal-emulation packages.

E78 Plus Version 1.3.0 includes DCA's E78 Lite emulation program, which requires 65K bytes of random-access memory instead of the 256K bytes of RAM required by existing E78 Plus versions.

E78 Plus has also been enhanced to only monitor keyboard strokes during emulation sessions. With previous versions, the Personal Computer CPU relied on E78 Plus' keyboard monitor to determine which keys had been struck even when operating in Personal Computer mode. Another E78 Plus enhancement supports video display adapters capable of displaying 132 columns of data.

Windowlink for Irma, which is a Microsoft Corp. Windows application enabling users to display multiple terminal-emulation sessions, was enhanced to support DCA's FT/3270 file-transfer software.

Irma 3 works with the following DCA terminal-emulation software packages: E78; E78 Plus; E78 Lite; Windowlink for Irma; Irmax DFT; Irmax Multisessions running under DOS; and E78 Plus for OS/2.

> Users can order Irma 3 preconfigured for either the ISA or the Micro Channel bus.

▲▲▲

In addition to the terminal-emulation module for OS/2 Extended Edition, Irma 3 works with IBM's 3270 PC Workstation Program, PC 3270 Emulation Program, PC 3270 Emulation Program Entry Level and PC/VM Bond.

Irma 3 also works with DCA's Irmalink FT/TSO, Irmalink FT/CMS, Irmalink FT/3270, Forte-Net and FT/Express file-transfer packages, all of which support IBM's host-resident IND$FILE file-transfer protocol.

Irma 3 complements DCA's Irma 2 board, which comes in two versions, one that supports the ISA bus and one that supports Micro Channel. However, both Irma 2 versions only work with DCA terminal-emulation software.

The new board costs $695. E78 Plus Version 1.3.0 is priced at $395. Current E78 Plus users can upgrade to Version 1.3.0 for $75. Windowlink for Irma version 1.1.0 costs $395. DCA will continue to sell Irma 2 boards bundled with E78 Plus software for $1,195.

Digital Communications Associates can be reached by writing to 1000 Alderman Drive, Alpharetta, Ga. 30201, or by calling (800) 241-4762 or (404) 442-4500. ◼

First Look

continued from page 21

new version of its text-to-speech conversion system that gives remote users access to a local network data base from a push-button telephone.

VoiceDB Version 1.1 allows callers to retrieve files from Ashton-Tate Corp. dBase or dBase-compatible data bases. Version 1 of the product could access only customized data bases.

VoiceDB consists of two boards and software that reside in a dedicated Intel Corp. 80286- or 80386-based personal computer with an IBM Personal Computer AT-compatible bus. Users can program the software to deliver voice prompts to remote callers dialing into the system.

As information on the data base is retrieved, VoiceDB converts the text into English words using an algorithm that promises 95% pronunciation accuracy, according to The Automated Group.

The product requires a personal computer with 640K bytes of memory, DOS 3.1 or above, and a network adapter card. Each two-board set supports one phone line.

Available now, VoiceDB costs $4,995.

The Automated Group, Inc., 10800 Alpharetta Highway, Suite 405, P.O. Box 1386, Roswell, Ga. 30077, or call (404) 926-0407.

Internal modem for Macintosh II introduced

Prometheus Products, Inc. recently introduced an internal modem for Apple Computer, Inc.'s Macintosh II microcomputer.

The **ProModem 2400MII Plus** operates at 2,400 bit/sec and resides in Macintosh IIs using Apple's NuBus bus architecture. Compatible with existing Macintosh software, the modem supports Microcom, Inc.'s Microcom Network Protocol (MNP) error checking and Class 5 data compression, which enables the modem to achieve throughput of 4.8K bit/sec under optimal line conditions.

The ProModem 2400MII Plus also has an on-board, intelligent buffer that prevents loss of data at all times. In addition, it features status lights that signal the modem's current function.

The new Prometheus modem can be purchased with an additional RS-422 serial port that can be used to connect to a printer, plotter or other serial device. The modem's software allows the user to choose between different serial ports.

The ProModem 2400 MII Plus supports the Hayes Microcomputer Products, Inc. AT command set as well as autoanswer and autodial functions.

It also stores modem configuration settings and frequently dialed telephone numbers in nonvolatile random-access memory.

The ProModem 2400MII Plus sells for $499. A version of the modem without MNP data compression, the ProModem 2400MII, is available for $399. Prometheus will upgrade the 2400MII to a 2400MII Plus for $99.

Prometheus Products, Inc., 7225 S.W. Bonita Road, Tigard, Ore. 97223, or call (503) 624-0571.

AT&T Paradyne upgrades Acculink

continued from page 21

AT&T Paradyne also announced Compressed Voice on DS-1 Channel, a module for both the Acculink 740 and 741 that supports ADPCM speech encoding. The module compresses 24 64K bit/sec digitized voice channels into 24 32K bit/sec channels that can be inserted into 12 DS0s. The module costs $5,540.

The company also announced a Dataphone Digital Service Subrate Data Multiplexing channel module for the Acculink 740 and 741 that enables users to insert multiple 2,400, 4.8K or 9.6K bit/sec channels into a single DS0 channel.

The module comes in two versions, a four-port device supporting direct attachment of data terminal equipment (DTE) via RS-232, RS-422 or V.35 interfaces, and an office channel unit data port module supporting attachment of up to four data service units via a four-wire interface. Either module costs $4,270.

The company also announced a Synchronous Data Channel Module for the multiplexers that supports direct attachment of DTE operating at speeds up to 1.544M bit/sec via an RS-232, RS-422 or V.35 interface. It costs $1,800.

Lastly, AT&T Paradyne introduced a Load Sharing Power Supply for the Acculink 740 and Acculink 745 multiplexers that automatically begins supplying power when the primary supply fails. The version supporting a 110-volt alternating current power supply is priced at $2,990. The version supporting a 48-volt direct current power supply costs $3,190. The Acculink 745 supports up to 16 incoming T-1 lines.

Users can contact AT&T Paradyne at 8550 Ulmerton Road, Largo, Fla. 34349, (800) 482-3333; in Florida, call (800) 343-1140 or (813) 530-2000.

Racal-Milgo adds to net mgmt. line

continued from page 21

4500 compatible with AT&T's Unified Network Management Architecture.

Racal-Milgo intends to release other VAX-based CMS systems but will continue to support its installed base of PDP-11-based CMS systems.

The CMS 4500 ranges in price from $200,000 to $300,000, depending on configuration. It is scheduled to ship in the first quarter of 1990.

Racal-Milgo can be reached by writing to 1601 N. Harrison Pkwy., Sunrise, Fla. 33323, or by calling (305) 475-1601.

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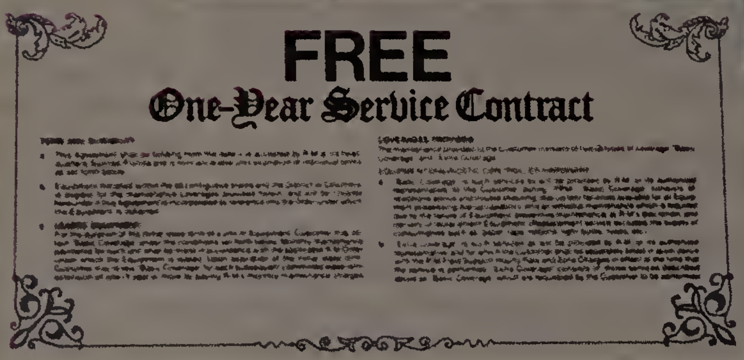
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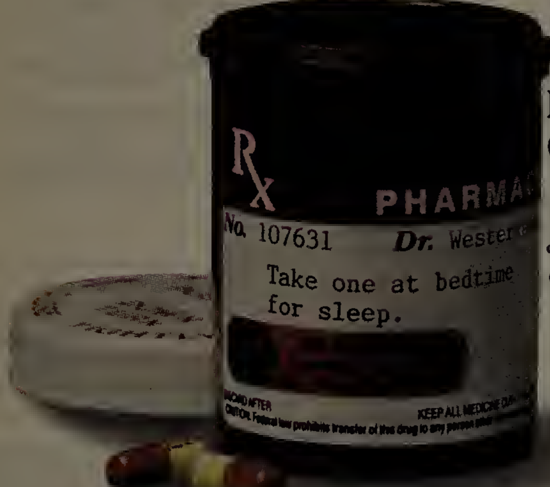

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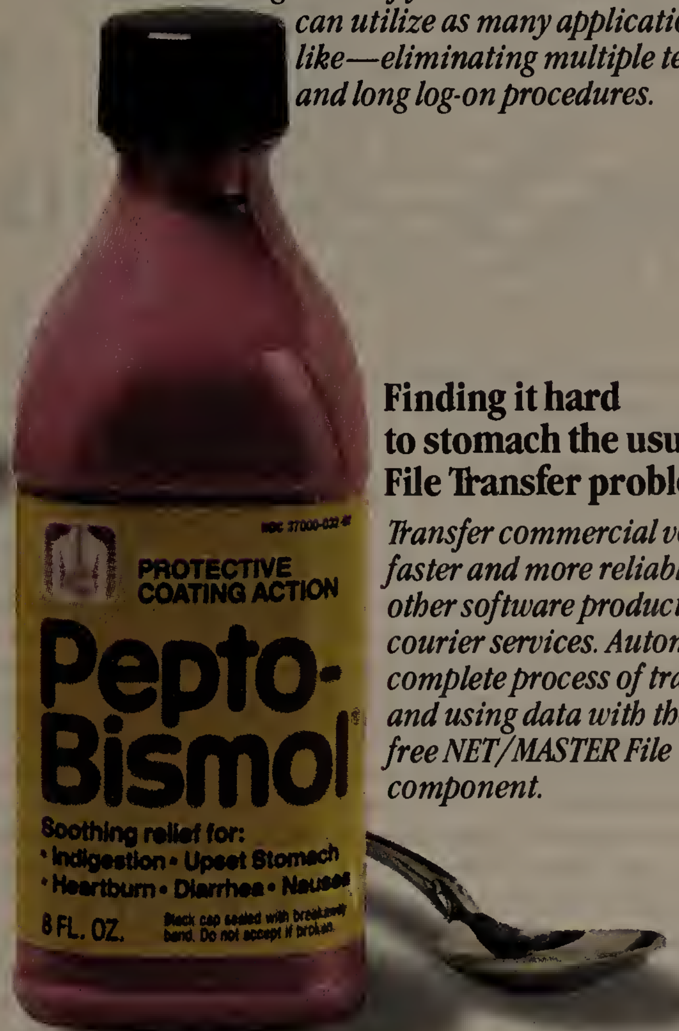
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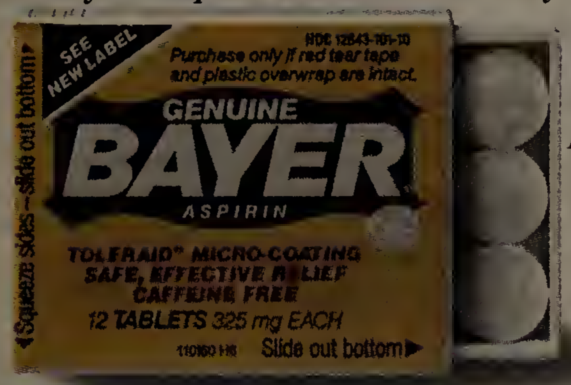

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OPINIONS

THE EUROPEAN COMMUNITY

BY JEAN GRENIER

Single market will present new telecom challenges

The European Community's (EC) plans to unite its 12 member states into a single internal market by 1992 present European countries with new challenges. The ability to harmonize different countries' telecommunications standards and procedures will be key to Europe's economic development as a whole.

To be a healthy participant in global telecommunications markets, Europe must organize itself better in terms of industrial research and development, standards setting and production costs. This is what the EC's 1992 plan is all about; its goal is not to exclude other players from the European market but to allow Europe to participate internationally. Far from harming the interests of the commercial partners of the community, the formation of a single European market will be profitable for them. Trading partners will benefit from no longer having to deal with 12 individual countries to tap into Europe's market of 320 million people.

To promote the development of a Europewide telecommunications market, which will benefit both European and non-European players, France has been an active participant in EC policy discussions and organizations supporting Europewide initiatives such as the European Telecommunications Standards Institute (ETSI). This organization, located at Sophia Antipolis, near Nice, France, will develop standards for the 1992 telecommunications common market. The ETSI intends to work in a spirit of close international cooperation, taking into account existing groups such as the International Standards Organization and the Consultative Committee on International Telephony and Telegraphy.

In addition, France supports the EC's Green Paper recommendations for telecommunications, many of which have already been implemented in France.

It should also be noted that the Open Network Provision (ONP), which has received some attention in the U.S. media, is meant to become the European equivalent of the U.S. Open Network Architecture (ONA). This does not mean that ONP and ONA will be the same or that they need to be. We all adhere to our own traditions; in Europe, we approach the notion of technical integrity of the general network in a different way than in the U.S. ONP will create conditions on a European scale for a fair and responsible offer of value-added services, in which the expertise of U.S. companies will be widely used.

Many sectors of the French telecommunications market have long been open to foreign suppliers, most notably in the provision of customer premises equipment. In recent years, to prepare for the arrival of a single European market, the French government has opened other areas to competition, among them radio telephony, paging services and value-added networks. French procurement procedures and equipment approval regulations, which have in many cases anticipated EC recommendations, are being aligned with expected Europewide policies. France is making a particular effort to publicize its standards and procedures to foreign suppliers to encourage full and fair commercial opportunities for all players in the French market.

Non-Europeans should not be alarmed about the approach of a single European market in telecommunications. Rather, they should view it as a new business opportunity with great potential. A unified market with a single, coherent set of standards will make it easier to sell products in Europe. The growth forecast for the telecommunications sector should lead to a truly competitive market with enough room for all players.

In working toward achieving a single market by 1992, European telecommunications is on its way to making a positive contribution to a new worldwide telecommunications system.

Grenier is director of the department of industrial and international affairs with France Telecom, Inc. in Paris.

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Assistant Managing Editor — Production
Beth Lazarus

Associate Editors
Peter Hoffmann
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West Coast Bureau
501 Second Street, Suite 600
San Francisco, Calif. 94107
(415) 978-3160

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EDITORIAL

Fighting all odds, Congress takes another stab at telecom

Despite numerous failed attempts in the last decade to shape the telecommunications marketplace through legislation, some politicians can't resist trying to encourage reform.

After all, it's politically safe. Banging drums about national competitiveness and the need to encourage progress gets headlines and carries little risk of alienating constituents. Heck, it might even achieve something.

The latest attempt to influence the industry was launched two weeks ago by Rep. Al Swift (D-Wash.) and Rep. Thomas Tauke (R-Iowa). The bill, the Consumer Telecommunications Services Act of 1989, is the third introduced by the two Congressmen since 1985. Like the earlier bills, this one is designed to loosen Modified Final Judgment restrictions on the regional Bell holding companies ("Congress mulls latest bill to loosen MFJ restrictions," *NW,* May 1).

Swift argues — reasonably so — that it's time for Congress to regain control of telecommunications policy. "You can't make sound policy from the narrow perspective of antitrust law," he says.

The Swift-Tauke bill proposes to let the RBHCs manufacture equipment and offer information services. But the RBHCs would not be allowed to use revenue from regulated telephone services to subsidize information service ventures or manufacturing efforts and would have to buy equipment from companies other than their manufacturing divisions.

Whether or not you agree with Swift and Tauke, it is impossible to get excited about the issue because the bill will probably never come to anything; Congress has a lousy track record on telecommunications.

Consider recent history. In 1981, near the height of the antitrust battle that would eventually lead to the divestiture of AT&T, Sen. Robert Packwood (R-Ore.) introduced the Senate Telecommunications Competition and Deregulation Act. The House followed with its own bill, the 1982 Telecommunications Act, sponsored by Rep. Timothy Wirth (D-Colo).

> It is impossible to get excited about the issue because the Swift-Tauke bill will probably never come to anything.
>
> ▲▲▲

The Senate bill called for AT&T to establish a separate subsidiary to sell nonregulated products. It also proposed a deregulation schedule that would have allowed AT&T to begin offering nonregulated transmission services and suggested that AT&T be required to buy a percentage of its equipment from independent suppliers.

The House bill was similar to the Senate bill, but it called for separate subsidiary requirements and different terminal deregulation provisions.

Despite the fact that the Consent Decree, which split up AT&T, made both bills moot, the politicians kept pushing them forward, insisting they were necessary for future policy efforts. They weren't. Both eventually dried up and blew away, wasting untold man-hours and taxpayer dollars.

Congress' next attempt to leave its mark on telecommunications came in 1986, when Sen. Robert Dole (R-Kan.) introduced legislation in the Senate that would have transferred control of the RBHCs from U.S. District Court Judge Harold Greene to the Federal Communications Commission. After scads of debate, the bill was put on the back burner and eventually died.

Now we're being asked to believe in Swift-Tauke.

We can't.

The last decade has shown that Congress has the desire to be influential in our industry but doesn't have the incentive (constituents are marginally interested in the efforts), knowledge or wherewithal to achieve reform.

The Swift-Tauke bill will likely follow its predecessors into oblivion.

NETWORK MANAGERS

BY MARK LEARY

Now is the time to strive for a more active corporate role

Companies with a history of success using information systems for a competitive advantage also have a history of being at the forefront with respect to organizational structure.

Early risk-taking MIS organizations were not constrained by being within the financial or operational portion of the corporate structure. However, it took most of the 1970s and even the early '80s for most other MIS groups to escape these constraints.

For too long, networking and communications organizations languished at the lower rungs of the MIS hierarchy. Typically, the senior network manager within a corporate structure performs an operational-level function, whereas the senior software and hardware managers have moved into more strategic positions, such as MIS directors, vice-presidents and chief information officers.

Now is the time for network managers to rise from the depths of the MIS organization and assert themselves as business strategists, not tacticians.

Why is now the time? Technological advances, competition, cost-consciousness and ever-expanding business boundaries are building tremendous momentum within networking and communications functions.

The sophistication of networking has grown exponentially in the last few years. Over time, standards will need to be updated.

Also, more intelligent networks, such as those using Integrated Services Digital Network technology, are causing corporations to take a more active stance toward networking.

If anything, further standardization and increasing network intelligence will force companies to assume more responsibility for the effective and efficient application of network management; local-area networks; voice, data and video processing; information security; and networked applications for end users. Planning, designing, implementing and administering the networks of the future will require high-level corporate commitment and representation.

Leary is director of communications industry research at International Data Corp. in Framingham, Mass.

Along with distributed processing came decentralized MIS functions. The intensity of competition inside and outside of corporations has given more power and responsibility to the end user. This has fueled a movement out from under the protective, centralized wing of corporate MIS, which has led, in many organizations, to information systems anarchy.

Net managers must take a more proactive role in business and network development.

▲▲▲

Since communications systems service and link both centralized and distributed processing systems, network managers and their staffs are in a perfect position to play a lead role in reestablishing a coordinated, enterprisewide corporate information system.

Investment

Dollars spent on networking and communications staff, systems and services now equal — or in some situations, surpass — those put toward traditional hardware and software functions. Anyone who has seen the bill associated with a major network upgrade can attest to this.

Because of the expense of providing advanced communications functionality, much more high-level, strategic judgment must be exercised when making distributed information systems decisions.

Providing better service for the end user is the bottom line of a corporation's computing power. In the old days (just a couple of years ago, really), the mainframe, its applications and the user terminal were the primary tools of business. Today, the links between mainframes, minicomputers, servers and personal computers form not only a necessary connection for an end user but also provide a strong competitive weapon that enables businesses to expand and diversify.

With so much in favor of the communications function receiving more organizational importance, why haven't senior communications managers received the keys to the executive washroom? Because they've been preoccupied with making sure lines are up, terminals are installed, phones are working and modems are repaired. Show me a senior network manager with no dead phones, modems or cable in his office and I'll show you a network executive, not a glorified operator. After all, you don't find any tapes in a senior software executive's office.

This history of reactiveness (the plug-it-in-and-get-it-working mentality) has kept networking and communications down for too long. And given the noncommunications orientation of the most senior MIS, financial, marketing and operational executives within corporations, network managers shouldn't expect to suddenly be invited to join the club. Network managers must take a more proactive role in business and network development, with the emphasis on business development.

Perhaps the rapid changes in communications technology are making networking professionals hesitant to focus on business issues because they will be distracted from keeping up with technology. Senior network managers must leave their technical hats in the closet. Their concern should be more on the application of technology than on the technology itself.

Without this reorientation, the promise of proper and advantageous networking will forever be unfulfilled.

The limited contact that network managers have had with end-user groups is a major obstacle to organizational advancement. Software and hardware systems managers have been increasingly (and begrudgingly at times) partnering with the end user. Network managers have been kept outside of this cooperative process by the walls of the MIS hierarchy. Where they have been involved, it has been as representatives of MIS interests, not as purveyors of new business practices. These walls must be broken down, and network managers must do the breaking. No one else is willing or able. ◼

TELETOONS

BY FRANK AND TROISE

But... "Mr. Communications Manager" wouldn't get all stressed out if you'd just shut him off at 5 o'clock, dear...

LETTERS

A virtual correction

I would like to correct several errors that were introduced into my recent opinion column on the Open Systems Interconnection virtual terminal standard ("A good idea whose time has passed," *NW,* March 27).

- IS-IS network layer protocols was incorrectly expanded to "information system-to-information system network layer protocols." IS in this context stands for intermediate system.
- VT must be implemented both on the application host *and* the terminal host.

As published, the article stated incorrectly that "VTP must be implemented on the application host *or* the terminal host."

- VT and virtual terminal were changed throughout to VTP and virtual terminal protocol. In my original manuscript, I had used VT and virtual terminal to refer to the virtual terminal service and the virtual terminal protocol together. Speaking explicitly about only the protocol is less accurate in the contexts where I used VT. And in some contexts, changing VT to VTP produces nonsense, as in VTP service.

Bill Buffam
Networking consultant
Unisys Corp.
Frazer, Pa.

Letters may be edited for space and clarity.

YOU DON'T NEED TO CONSULT A TELEPATHIST to have your thoughts read. All you need to do is write a guest column for *Network World*'s Opinions pages, and countless network managers and users will be able to read your thoughts on the communications topic of your choice.

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If you'd like to write a column, contact Steve Moore, features editor, *Network World,* Box 9171, Framingham. Mass. 01701, or call (508) 820-2543, ext. 732.

A yen for networking

By JACK KELLY

Communications managers who want to build networks in Japan need to know the territory and the rules of the game.

U.S. business is on the move as products and services reach their true potential in international markets. Network managers who work for forward-thinking companies have been assigned the task of designing and implementing international voice and data communications solutions to satisfy their companies' needs.

Japan is one of the countries in which U.S. business is most interested in gaining a foothold. Perceived barriers to establishing a presence in Japan shouldn't prevent U.S. businesses from entering lucrative Japanese markets. Neither should the lack of current information about Japanese telecommunications intimidate the communications professional.

Kelly is director of product marketing for Avanti Communications Corp., a Newport, R.I., manufacturer of high-speed communications equipment.

Japan has a wide variety of communications services for domestic and international networks — varied in capabilities and price, and competitively offered.

This plethora of communications services allows for the same type of customization and tailoring toward user needs that is found in the U.S. With knowledge of the services available, the carrier and vendors willing to provide them, and the interconnection requirements necessary to connect to domestic networks, network managers can confidently work to gain access to Asian markets.

Getting started

How does one establish a presence in Japan and procure the best and most cost-effective communications services to meet the needs of the business? Companies that attempt to do this must learn to cope with cultural and regulatory obstacles that are, at first, confusing. They must also overcome the preference of the Japa-

(continued on page 44)

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Face-to-face

CONTINUED FROM PAGE 1

for some companies to conduct sales meetings, training sessions, product reviews and ad hoc meetings.

Teleconferencing is growing at a healthy rate. According to a report published recently by Market Intelligence Research Co. (MIRC) of Mountain View, Calif., the total annual revenue for teleconferencing products, services and transmissions grew from $200 million in 1983 to $680 million in 1988, with a growth forecast of $1.8 billion for 1993. Teleconferencing service providers currently generate two-thirds of this revenue; teleconferencing equipment companies produce the remaining third.

Teleconferencing systems come in several forms, the principal ones being audio conferencing, audiographics conferencing, computer conferencing and videoconferencing. Audio conferencing can range from an office speakerphone system to advanced systems that include echo reduction functions. Audiographics include visual systems that allow participants to share and interact with visual still-frame images of charts, diagrams and even freeze-frame shots of one another. Computer conferencing is the electronic exchange of typed text. Videoconferencing adds another dimension by allowing participants to view motion pictures of one another, most closely approximating a live meeting.

According to MIRC's report, the total market revenue for the audio and audiographic segments grew from $80.4 million in 1983 to $223.3 million in 1987, with revenue projected to be $875.5 million by 1993. The total market for the comput-

(continued on page 41)

CHART • GUIDE

The features and prices of a range of videoconferencing equipment are listed in a chart beginning on page 40.

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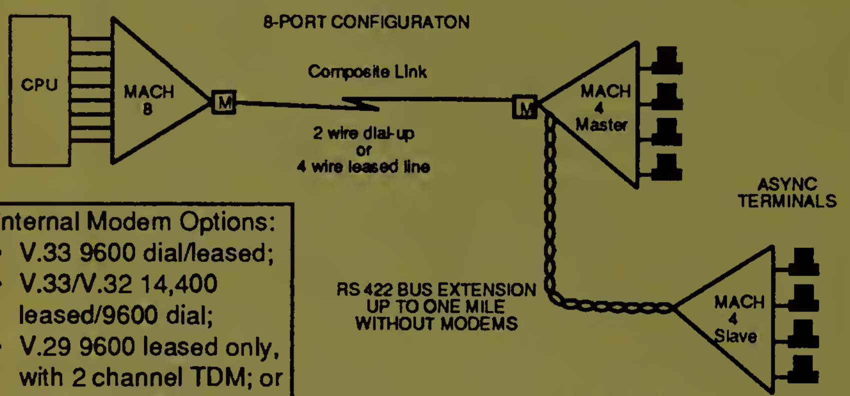
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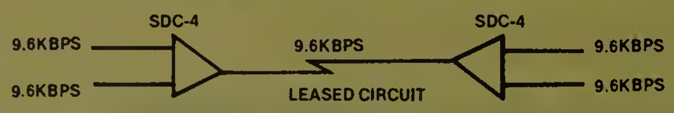

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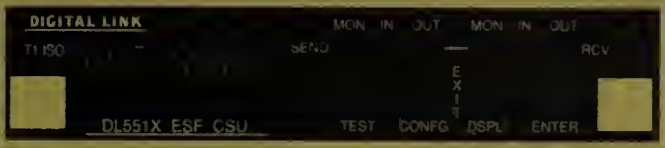

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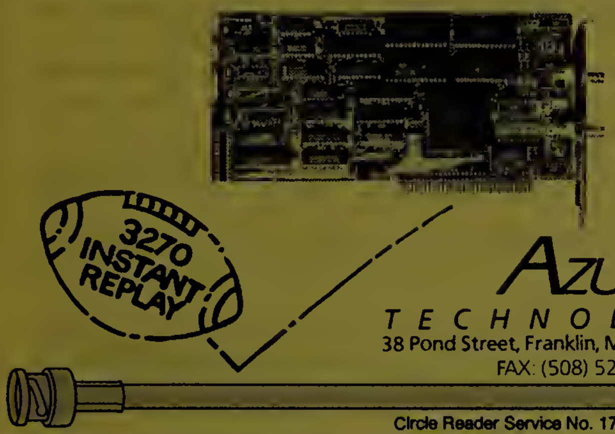

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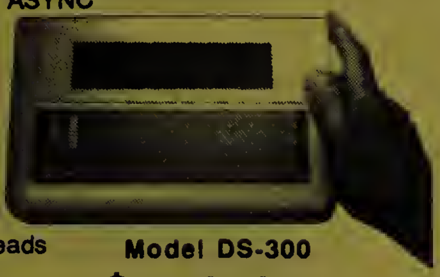

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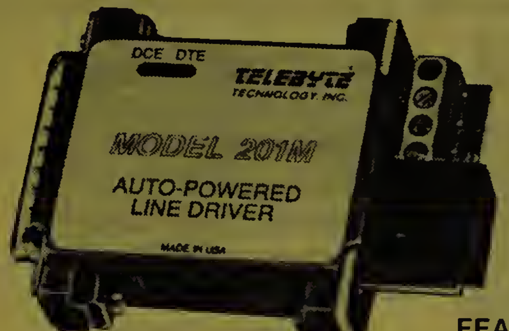

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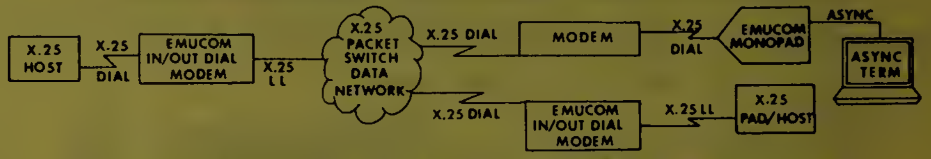

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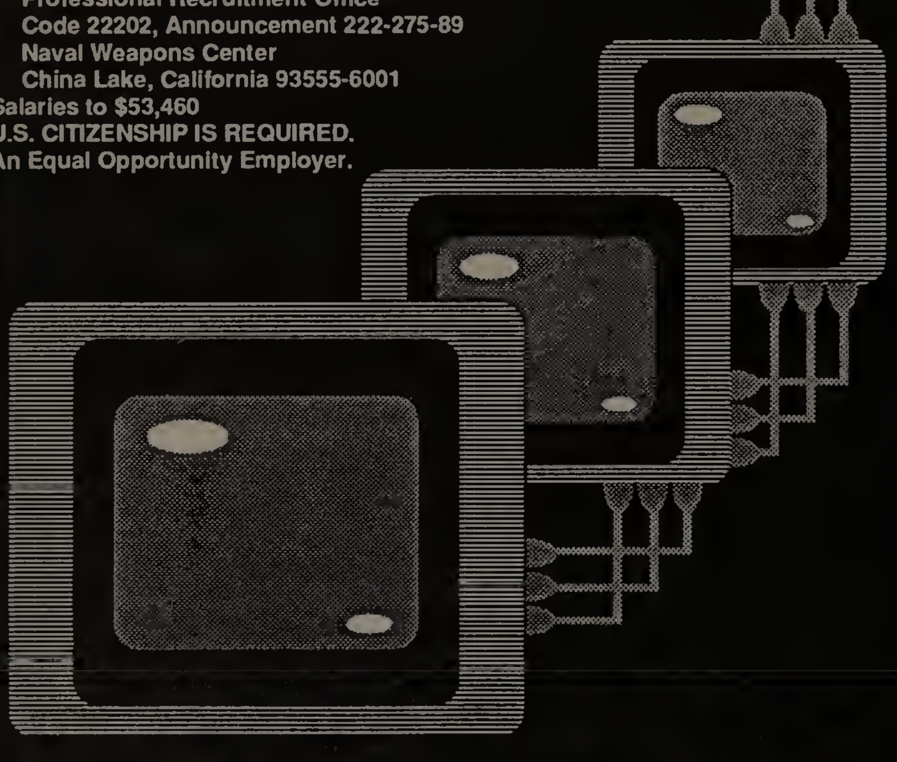

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- A working knowledge of data/voice services

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Requires: 2-7 years experience in business analysis and high-tech electronics marketing, preferably in data-voice communications; a strong knowledge of business and marketing fundamentals; and outstanding interpersonal and problem-solving skills. A Bachelor's Degree or equivalent in Electrical Engineering and progress toward an MBA are preferred. Some travel is required.

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Working in a small group you will define the overall networking product plans and strategies. Responsibilities include developing new product directions and strategies in the context of competitive and market analysis. A technical undergraduate degree and at least 3 years related experience are required. A combination of strong technical and excellent leadership/interpersonal abilities is essential. Should also have specific knowledge of existing AT&T or competitive data communications products and services in areas such as TCP/IP, OSI, SNA, Ethernet, Token Ring, bridges, routers, gateways, and Network Management.

Product Manager—High-Performance Local Area Networking

You will define and manage various high-performance LAN and LAN Interconnect products. Responsibilities include customer support, competitive and market analysis, developing new concepts, leading product teams, defining innovative marketing and services programs and managing product life cycles. A technical undergraduate degree and at least 3 years related experience are required. A combination of strong technical and excellent leadership/interpersonal abilities is essential.

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ONE

Most Important/Useful Trade Publication

It began with the 1988 *Wall Street Journal* Study naming *Network World* the Most Important/Useful networking/communications trade publication among ICA members. *Network World* notched a 34 percentage point increase in its climb to the Most Important/Useful position, while every other networking/communications trade publication actually lost ICA member support — by as much as 9 percentage points.

Publication	Percentage-point Increase/Decrease
Network World	34%
TP+T	-1%
Data Communications	-1%
Telephony	-2%
Teleconnect	-3%
Telecommunications	-3%
Communications Week	-8%
Communications News	-9%

Source: *The Wall Street Journal* ICA Study by Erdos and Morgan, March 1986 and March 1988.

TWO

Most Helpful Publication

Then the 1988 Telecommunications Association Member Study revealed *Network World* to be the Most Helpful publication for giving managers and users the kind of news and information they need every day.

Publication	Preference
Network World	30%
Communications Week	25%
Business Communications Review	20%
Communications News	15%
Data Communications	15%
Teleconnect	15%
Telecommunications	10%
Telephony	10%

Source: 1988 Telecommunications Association Member Study.

THREE

Largest Growth in Ad Pages

And the December 1988 TA Report showed *Network World* leading all other networking/communications publications in ad-page growth. In fact, *Network World's* growth for the comparative periods exceeded that of its nearest competitor by 63%!

Publication	Ad-Page Growth
Network World	64%
Data Communications	1%
Communications Week	-5%
TEM	-12%
Telephony	-20%
Telecommunications	-20%

Source: December 1988 TA Report. Comparative growth in advertising pages for the period from January-December 1988 versus January-December 1987.

Network World delivers your advertising message to an audience of over 70,000 ABC audited buyers — who each plan to spend an average of $2.5 million on networking/communications products and services in the next 12 months. So when you're planning your strategy for reaching buyers, go for a sweep — and turn to *Network World*. Call Paul McPherson, Director of Advertising, at (508) 820-2543 to reserve your space today!

NETWORK WORLD

Videoconferencing equipment

Vendor	Product	Configuration	Transmission	Video resolution (pixels)	Frame refresh rate (frame/sec)	Audio operation	Interfaces	Price range
Colorado Video, Inc. **Boulder, Colo.** **(303) 530-9560**	Video Transceiver 250	Desktop system	Analog slow-scan over standard phone line, 35 and 75 sec transmission time	256 by 240 or 256 by 480 memory elements with 256 shades of gray	Slow-scan	External phone	TV video, phone line	$3,000 to $4,600
	Video Transceiver 286C	Rackmount, desktop or portable system	1,200 to 500K bit/sec, RS-232, V.24 or V.35, 85 sec transmission time typical at 9.6K bit/sec	256 by 240 to 512 by 480, monochrome or color, 64 or 256 shades of gray	Slow-scan	External phone or broadcast circuit	TV video monochrome or color, phone line, data port, computer port for mass storage	$8,000 to $20,000
Compression Labs, Inc. **San Jose, Calif.** **(408) 435-3000**	Rembrandt 56	Portable or desktop system	56K to 384K bit/sec, RS-449, V.35, dual V.35	240 by 256 NTSC, 288 by 256 PAL	10 to 15 NTSC, 8.33 to 12.5 PAL	Integrated 8K to 64K bit/sec or external phone line	Motion video: NTSC, PAL, audio room system interface, Still graphics: composite video, User data: 1 RS-232, 1 RS-449	Starts at $30,000; auxiliary equipment for video system additional
	Rembrandt	Dedicated boardroom required	384K to 3.136M bit/sec, T-1, G732, RS-449, V.11, NTT T-1	480 by 368	15	Inband 64K bytes fixed or variable 56K to 99K bytes	Motion video: NTSC, PAL, RGB, video switcher for 8 video sources, conversion between NTSC and PAL standards, audio I/O interface, Still Graphics: composite video or RGB, User data: 1 RS-232, 2 RS-449	$68,000 for coder/decoder; auxiliary equipment additional
Concept Communications, Inc. **Dallas** **(214) 746-3888**	Image 30	PC-based desktop system	56K to 384K bit/sec video only, 112K to 384K bit/sec with integrated audio, RS-422/449	256 by 200	30	Integrated 32K bit/sec or external phone	Motion video: PC video board with NTSC, RGB, Audio: PC audio board with microphone, Still graphics: CGA input	$16,400 includes PC boards, camera, microphone and cables, 14-in. RGB monitor; IBM Personal Computer XT, AT compatible additional
Datapoint Corp. **San Antonio, Texas** **(512) 699-7000**	Multimedia Information Network Exchange (MINX) product line	Desktop system; configurable for conference rooms or roll-abouts with MINX Network Interface	Analog video over local video or broadband local nets	330 lines analog video	30	Half-duplex audio with workstation, network interface half- or full-duplex	MINX workstation: built-in camera and monitor for NTSC, PAL, microphone, speaker, interfaces for external camera, monitor, VCR, PC; MINX Network Interface provides conference room equipment interfaces	$6,995 for server plus $5,995 per workstation, local net connectivity with workstations; $3,400 for MINX Network Interface
	MVC II	Interfaces with MINX product line via MINX Cluster Video Adapter	1,200 to 384K bit/sec, RS-449, V.35	256 by 240	Variable	Integrated, external phone line	Motion video: NTSC, PAL, Audio: microphone and speaker, Still graphics: NTSC, PAL, RGB, User data: 4 ports RS-232, RS-449, V.35	$23,950 for coder/decoder, MINX Cluster Video Adapter $1,995, auxiliary equipment additional
Eytel Communications, Inc. **New Westminster, B.C., Canada** **(604) 525-2511**	Vistacom Videophone	Integrated desktop system	56K or 64K bit/sec, V.11, RS-449, V.35 option	240 by 256	4 to 30	Integrated 9.6K bit/sec, echo cancellation	Integrated 6-in. monitor, CCD camera and phone; external video and audio interface	$16,500 for integrated video system, includes coder/decoder
GPT Video Systems **Stamford, Conn.** **(203) 348-6600**	Madison	Portable system	384K to 1.544M bit/sec, DS1, RS-449	260 by 216	30	64K bit/sec full duplex, echo cancellation, inband	Motion video: NTSC or RGB, Audio: 2 microphones, 2 speakers, auxiliary ports for tape player or telephone add-on, Graphics: NTSC or RGB, Data: two 64K bit/sec X.21	$150,000 includes coder/decoder plus 2 cameras, 3 monitors, complete audio and control; $20,000 for graphics workstation
Grass Valley Group, Inc. **Grass Valley, Calif.** **(916) 273-8421**	4500 Codec	19-in. rackmount	Multiplexed 44.736M bit/sec, DS3 compatible	Full-motion video	Full-motion video	2 stereo audio multiplexed channels	NTSC or monochrome video, 2 stereo audio, 4 T-1, 2 RS-232 at 300 to 19.2K bit/sec	$12,950 for multiplexer with video, stereo audio, 4 T-1, 2 asynchronous data channels
Interand Corp. **Chicago** **(312) 478-1700**	Discon Imagephone	Desktop system	9.6K bit/sec V.29 or V.27, Typical completion: 80 sec normal mode; 30 sec fast mode; 16 sec document mode	640 by 480 with 256 gray levels normal mode, 320 by 240 with 256 gray levels fast mode	Still frame	External phone	12-in. black-and-white monitor, video camera, mouse pointer, floppy and hard disk storage	$9,950
	Discon 725	Conference room, office or plant floor	9.6K bit/sec typical RS-232-C, packetized transmission with error correction	640 by 480	Still frame	External phone	RGB video in and out, phone module, document station, video input switch	Approximately $37,000 depending on system configuration and peripherals
Mitsubishi Consumer Electronics America, Inc. **Torrance, Calif.** **(213) 515-3993**	MVC-7000	Conference room or desktop system	64K to 384K bit/sec, RS-449/422, V.35, DSU, ISDN B channel	384 by 240 normal mode, 192 by 120 sub-sample mode, 384 by 240 still mode	7 to 10 normal mode, 15 sub-sample mode	16K to 64K bit/sec inband	Motion video: 1 port NTSC, Audio: microphone and speaker, User data: 2,400 to 4.8K bit/sec RS-232-C	$35,000 for coder/decoder; auxiliary equipment for video system additional
	Invite 64 with MVC-5000 coder/decoder	Desktop system	64K or 56K bit/sec, V.10/11, V.35, X.24, ISDN B channel	320 by 240 motion video telephone mode, 160 by 120 motion videoconference mode, 640 by 480 still-video mode	7 to 10 telephone mode, 10 to 15 conference mode	16K or 9.6K bit/sec inband	Motion video: 1 port NTSC, Audio: handset or microphone and headset, Still graphics: RGB, mouse pointer, User data: 300 to 9.6K bit/sec RS-232-C, PC and facsimile	$35,000 to $40,000 for MVC-5000, $3,500 for VP-60 videophone with monitor, camera, handset and keypad, $5,500 for graphics stand with high-resolution camera and associated equipment
NEC America, Inc. **Herndon, Va.** **(703) 834-4000**	Visualink 1000	Conference room	56K to 384K bit/sec, V.35, RS-449, ISDN S interface option	176 by 288 standard mode, 352 by 288 fine mode	10	16K bit/sec or optional 56K bit/sec inband at 384K bit/sec transmission speed	Motion video: 3 ports NTSC or PAL, audio I/O, Still video: 1 port, User data: 4.8K bit/sec, RS-232-C	$30,000 for coder/decoder
	Visualink 3000	Conference room, boardroom	384K to 2.048M bit/sec, RS-449/422, T-1, CEPT	352 by 288	Up to 30	56K bit/sec inband	Motion video: 3 ports NTSC or PAL, audio I/O, User data: high-speed 64K bit/sec RS-449, low-speed 4.8K bit/sec RS-232, Still graphics: one, dual video send option	$62,100 for coder/decoder
Optel Communications, Inc. **New York** **(212) 741-9000**	Telewriter 3 PC	Conference room, desktop or portable system	Dial-up telephone lines; speed-selectable 300 to 19.2K bit/sec, single-line transmission of voice and data simultaneously via Optel Voice-Too Modem, time dependent upon modem selection, point-to-point and multipoint transmission	512 by 480, 32,768 colors available	Still frame video capture	Standard audio conference devices	Video capture from NTSC and RGB video sources (camera, camcorder, VCR) can be integrated with analog and digital videoconference systems as full graphics workstation	$5,500 to $15,000
PictureTel Corp. **Peabody, Mass.** **(508) 977-9500**	C-3000	Conference room	1,200 to 384K bit/sec, automatically clocks to network speed, RS-449, V.35, 2 RS-366 for AT&T Switched 56, dual-channel interface optional	256 by 240	10	Internal, external	Motion video: NTSC, PAL, PAL to NTSC conversion, audio I/O, Still Graphics: NTSC, PAL, RGB, User Data: 4 ports RS-232, RS-449, V.35	Starts at $29,500; auxiliary equipment for video system additional
Videophone, Inc **Houston** **(713) 741-1571**	VP286 or VP286-HR (High resolution)	Conference room or desktop system	19.2K bit/sec, 25 to 20 sec transmission time for full-color image, 5 sec for graphics, 60 sec for high resolution, up to 59 locations connected via bridging	256 by 256, 32,768 colors available; 512 by 512 for HR model	Still frame, 1.5 sec from call up	External phone line	CCD camera, 20M byte and up hard disk, 13- to 46-in. color monitor, pen and tablet, printers, scanners	$7,500 for graphics only, includes Optel's Telewriter 2-PC system; $17,000 with high-resolution video and graphics, includes Optel's Telewriter 3-PC system

NETWORK WORLD

Videoconferencing equipment

Vendor	Product	Configuration	Transmission	Video resolution (pixels)	Frame refresh rate (frame/sec)	Audio operation	Interfaces	Price range
[redacted]com Corp. Au[redacted], Texas ([redacted]12) [redacted]34-[redacted]734	CS200	Portable system	56K to 768K bit/sec, RS-449/422	256 by 240	5 to 15	32K bit/sec full duplex, echo cancellation, inband or out of band	Motion video: main and auxiliary cameras; Audio: 2 microphones and speaker; Still graphics: NTSC; User data: 1 RS-232	$33,950 includes coder/decoder, 1 camera, 1 monitor, microphone
	CS300	Conference room	56K to 768K bit/sec, RS-449/422	256 by 240 standard, 512 by 480 optional	5 to 15	32K bit/sec full duplex, echo cancellation, inband or out of band	Motion video: main and 2 auxiliary NTSC; Audio: 2 microphones and speaker; Still graphics: NTSC or computer; User data: one RS-232; IBM Personal Computer AT, VCR connection, printer port, facsimile	$41,500 includes coder/decoder, 2 monitors, 2 cameras, 2 microphones, Personal Computer AT, hand-held infrared remote controller

CCD = Charge-coupled device
CEPT = Conference Europeenne des Postes et Telecommunications
CGA = Color graphics adapter
DSU = Data service unit
NTSC = National Television Standard Code
NTT = Nippon Telephone and Telegraph Ltd.
PAL = Phase-alternating line
RGB = Red, green and blue

This chart includes a representative selection of vendors in the videoconferencing equipment market. Most vendors offer other videoconferencing equipment, and other vendors not included offer a range of competitive products.

SOURCE: TELESYNE, INC., SAN JOSE, CALIF

(continued from page 29)

er conferencing segment increased from $2.22 million in 1983 to $7.87 million in 1987, with revenue projected to be $72.93 million by 1993. The total market for the videoconferencing segment grew from $118.8 million in 1983 to $307.7 million in 1987, with revenue projected to be $882.1 million by 1993.

The two most common forms of videoconferencing are captured-frame video and motion video. Captured-frame video includes slow-scan and freeze-frame systems, which take a camera input and transmit a single complete frame over narrowband dial-up phone lines.

At the other end of the videoconferencing spectrum, uncompressed full-motion video involves transmission of 30 frames per second with a signal bandwidth of 4 MHz. In general, videoconferencing is equated with motion video.

Full-bandwidth broadcast video provides the best quality motion video. However, the transmission bandwidth for broadcast quality video can be expensive and is not easily available. Analog broadcast transmission is most often used for one-way multidestination videoconferencing applications. For point-to-point two-way interactive videoconferencing, full-bandwidth transmission is not cost-effective. Bandwidth compression is required for economical teleconferencing applications.

Digital transmission employing efficient coding can optimize the use of channel capacity. A wide range of bit rates is available for video transmission. Generally, the higher the bit rate, the better the picture quality and the lower the coder/decoder complexity and cost.

Full-bandwidth digital video is pulse code modulation-coded at a rate of between 80M and 100M bit/sec. Techniques have been established that compress this data rate to anywhere from 30M to 60M bit/sec for digital transmission of standard TV broadcast signals. For teleconferencing applications where motion is limited and picture quality is not critical, video coders can achieve bandwidth reduction of up to 56K to 384K bit/sec.

The higher bit rates can be used cost-effectively for short-haul videoconferencing applications. Short-haul transmission facilities such as microwave and fiber are privately owned and easily provide the higher transmission capacity. Bit rate reduction is especially attractive for long-haul videoconferencing, which must rely on the availability of digital transmission facilities that are currently limited in bandwidth to 1.5M bit/sec or less. Ongoing improvements in coding techniques continue to reduce bit rates while improving picture quality.

Dataquest, Inc., a San Jose, Calif.-based market research firm, projects revenue for low data rate video compression coder/decoders to exceed a 40% compounded annual growth rate from 1987 to 1992.

The 1992 revenue projection for motion video compression coder/decoders with a transmission rate of 56K to 384K bit/sec is $26.3 million, up from $5.6 million in 1987 — approximately a 48% compounded annual growth rate.

The projected 1992 revenue for coder/decoders with a transmission rate from 384K bit/sec to T-1 is $88.2 million, up from $13.8 million in 1987. Revenue for the higher rate (45M bit/sec and up) coder/decoders, used primarily for broadcast applications, will grow at a slower rate, from $2.9 million in 1987 to $7.7 million in 1992.

Dataquest also projects growth for the captured-image coder/decoder market, with revenue growing to $18.7 million in 1992 from $9.3 million in 1987.

Video coder/decoders

The video coder/decoder is the key component that makes long-distance videoconferencing affordable. Video coder/decoders achieve bit rate reduction by reducing the amount of data necessary for transmitting video images. This is achieved by reducing the redundancy in the picture signal. Encoding techniques include transform coding and predictive coding of the television signal.

Transform coding reduces data redundancy by taking advantage of the statistical dependencies of picture elements. Transform coding is so called because it algorithmically transforms a set of picture elements into coefficients that are less correlated and more independent.

Various transforms lead to energy concentration in only a few coefficients that contain most of the picture information: Discrete Cosine Transform (DCT), Karhunen-Loeve Transform, Walsh Transform and Slant Transform. PictureTel Corp. in Peabody, Mass., introduced a proprietary coding technique last year called Hierarchical Vector Quantization that reportedly achieves a 70% improvement in transmission efficiency over DCT.

Videoconferencing systems can be configured in several formats: single-person camera, switched camera, split screen and continuous presence.

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Predictive coding eliminates redundancy in the picture by transmitting only the difference between successive picture elements instead of the complete information. Predictive coding schemes employ intraframe, interframe and movement-compensated predictors.

Intraframe coding reduces bit rates by removing redundancy within a video field in each frame. Interframe coding achieves greater reduction in bit rates by eliminating redundancy between successive picture frames.

More recent developments in image coding have been toward modeling motion, especially for low bit rate (less than 384K bit/sec) transmission. Movement-compensated interframe coding achieves lower bit rates for pictures with relatively high motion by estimating the movements of objects and basing predictions in the direction of movement.

The information to be transmitted depends on the amount of motion in the picture. The more active the picture, the greater the information to be transmitted. In high-motion scenes, data compression is achieved at the expense of picture resolution, or reduced frames or fields transmitted per second.

When the information generation rate exceeds the transmission rate, picture quality will start to degrade. No objective measures for picture quality exist, and performance evaluation of different coder/decoders is primarily subjective.

Current vendor implementations of coding techniques are proprietary and, therefore, incompatible. To achieve compatibility requires back-to-back coder/decoders converting one digital format back to analog and then into the second digital format. This may not be a problem within one company, but intercompany videoconferencing can become expensive when each company's system is implemented differently.

The Consultative Committee on International Telephony and Telegraphy is taking steps to establish a single standard by 1992 to handle transmission rates from 64K bit/sec to 2M bit/sec. This single standard, referred to as P x 64, will replace the two separate and incompatible standards termed N x 384 for high transmission rates and M x 64 for low data rates.

The algorithm used within P x 64 is an implementation of DCT, though the proposed standard will likely allow different types and generations of coder/decoders to work together through a negotiation procedure. CCITT documentation on P x 64 is expected to be released sometime this year, and coder/decoders conforming to the standard are likely to be available by 1990.

System configurations

Videoconferencing facilities can be designed in one of several forms, depending on the application. Dedicated facilities are conference rooms equipped with cameras, monitors, lighting and acoustic systems. These facilities are suitable for meetings with six to 10 participants.

Portable or roll-about systems are modular enclosures that house most of the necessary equipment and can be moved from room to room. Thus, any room can serve as a conference room with a single portable package. This avoids costly room construction and outfitting.

Desktop conferencing systems house a coder/decoder, camera, monitor and speaker for person-to-person video communications in a compact unit. These units can connect to a local network or private branch exchange and act as a video intercom system.

Videoconferencing systems can be configured in several formats: single-person camera, switched camera, split screen and continuous presence. A single-person camera provides continuous full view of all conference participants. The camera is usually outfitted with a zoom lens and is mounted on a computer-controlled pan-and-tilt drive. As the number of participants increases, the camera must be zoomed back to maintain a view of all participants. With several participants, the resolution may be low in a wide-angle shot.

For larger conferences, a switched-camera format with multiple cameras is more suitable. The conference participants are arranged in small groups, with one camera covering each

(continued on page 42)

(continued from page 41)

group. The output of only that camera covering the current speaker is switched to the transmitter through a voice-activated video switch. Such a system provides close-up views of the current speaker, though at the expense of simultaneous visual presence of all participants. A wide-angle shot of all participants is transmitted intermittently with the individual close-ups.

Because of the large number of cameras needed, the switched-camera configuration must be confined to a dedicated conference room.

The split-screen and continuous-presence formats can be used to achieve greater detail and maintain continuous visual presence of all participants. With the split-screen format, the conference participants are split into two groups and two cameras are used, one for each group. Only a head-and-shoulders view of the participants is taken, and the two signals are multiplexed together into a single video signal transmitted to the receiver. At the receiving end, the images are displayed on two side-by-side monitors or stacked on a single monitor.

In a continuous-presence system, the conference participants are split into several smaller groups with a camera covering each group. The outputs from all cameras are combined and displayed on independent monitors at the receiving end. The system maintains a simultaneous view of all participants while providing greater detail than a single wide-angle shot.

Systems integration

The equipment needed to build a video-

Video recruiting promises to

By Stephen Shaw
Special to Network World

Videoconferencing technology will soon have a profound impact on the way businesses and government agencies recruit their employees.

As the first phase of the planned College Relations Network, two-way videoconferencing units and digital channels are being installed at 21 colleges and universities nationwide. The video network will link these schools with major corporations, government agencies and other organizations. Upon its completion, graduating seniors will be able to use videoconferencing to interview electronically for jobs.

Installation of the network is being performed by Boston-based Video Placement Co., Inc. (VPI) and is scheduled to be finished at core sites by the end of May. At that time, corporations and government agencies are expected to sign on and use the network to supplement on-campus recruiting visits.

"Once 10 or 12 schools are linked, then the corporations will get in," says Robert Greenberg, director of career planning and placement at the University of Tennessee at Knoxville, one of the schools already on the network. "Recruiters have told us they're interested, and they're watching it carefully."

Other schools currently on the College Relations Network include Purdue University in West Lafayette, Ind.; California Institute of Technology in Pasadena; Georgia Institute of Technology in Atlanta; and Atlanta University. Universities in the final stages of installation include Cornell University in Ithaca, N.Y.; Syracuse University in Syracuse, N.Y.; the University of Houston; Michigan Technological University in Houghton; and the University of Illinois at Urbana-Champaign.

> "Once 10 or 12 schools are linked, then the corporations will get in," says Robert Greenberg, director of career planning and placement at the University of Tennessee at Knoxville.
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In addition to the 21 schools already on the net, VPI has commitments from another 125 colleges and universities to install the videoconferencing unit.

Corporations already have had some experience with the benefits of video campus recruiting. A 1986 pilot project run by VPI brought The Boeing Co., General Electric Co. and Harris Corp. together for a demonstration and real-life interviews with senior engineering students at Georgia Tech and Purdue.

"It's great for screening applications after an initial interview. It helped us [make] the decision whether to bring students in for a trip to our plant," says John Hannabach, GE's former director of college relations and now head of corporate relations and placement for Georgia Tech. "At GE, we recommended the system highly."

Shaw is executive editor of Capital News Group, a Washington, D.C. news service specializing in high technology.

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save money and reduce travel

Those involved in the pilot say that videoconferencing offers some powerful advantages. For example, follow-up studies of the pilot indicated that the students felt more at ease without the interviewer sitting in the same room. On the other hand, they added the caveat that video recruiting won't replace in-person interviews or campus visits by corporate recruiters; it will only supplement them.

Roll-about video

Both the College Relations Network and the pilot network used a roll-about videoconference system called the Profile System, produced by Videoconferencing Systems, Inc., a systems integrator based in Norcross, Ga. Unlike conventional designs, the unit is designed to provide close-up, eye-to-eye contact between the participants.

A one-way mirror reflects images from a 20-in. display screen mounted flat in the cabinet. The camera is mounted behind the mirror, out of sight of the meeting participants. Hiding the camera, says VPI President Vincent Cogliano, eliminates one of the major distractions of videoconferences and allows the participants to react naturally to each other at eye level, rather than looking up or down at a monitor or camera.

The unit also has inputs for relaying videotapes, computer files and graphics. An easy-to-use control panel allows images to be previewed and adjusts audio, zoom and focus levels.

VPI is providing the videoconferencing unit, priced at $58,000, to colleges and universities at no charge under an exclusive, five-year agreement. For corporate customers, VPI offers a leasing arrangement for a monthly fee of $1,000.

The unit transmits full-motion video images at rates up to 385K bit/sec. VPI has signed with US Sprint Communications Co. to use the carrier's all-fiber network. Using the fiber network is far less expensive than satellite transmission costs, Cogliano notes. At the 385K bit/sec transfer rate, hourly circuit charges are $135 on the terrestrial network.

In the Army now

Several government agencies are evaluating the VPI videoconferencing system for both military and civilian applications. In fact, the U.S. Army is an early user of videoconferencing. The Army's Institute for Research in Management Information, Communications and Computer Science (AIRMICS), the high-tech descendant of the Army Signal Corps, has the videoconferencing system in place at Ft. Huachuca in Arizona and Ft. Belvoir in Virginia.

College senior Adrienne Raglin recently used videoconferencing to find a position with AIRMICS. Graduating this year from a cooperative program between Georgia Tech and Spelman College in Atlanta with degrees in computer science and electrical engineering, she's an obvious candidate for corporate recruiters.

In February, she had an initial interview with an AIRMICS representative. She liked the job AIRMICS had in mind, and her initial AIRMICS contact gave his approval for the next round of interviews.

Then, through videoconferencing, Raglin talked to a woman with a similar job at an Arizona AIRMICS unit. They talked for about an hour about the pros and cons of the position. Raglin was able to provide information about her academic record and other strengths. "By seeing the other person, I was able to get a sense of how comfortable she felt with me," Raglin says. "I could read her body language and keep eye-to-eye contact with her as if she were in the room with me."

She got the nod for the next round of interviews, which were held face-to-face at the AIRMICS office in Atlanta. The Army agency was impressed, and Raglin accepted an offer to become one of its technology analysts. ◼

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conferencing system includes video, audio, still graphics, and control and transmission devices. Most coder/decoders will also provide interfaces for exchange of computer data. The room design itself is a critical element and must take into account issues such as room lighting, soundproofing and layout of furniture and equipment.

Many users may not want to deal with all these integration issues. According to MIRC, an entire industry has grown up around the idea of systems integration. This market segment is responsible for nearly half of all revenue generated by the overall teleconferencing equipment market. The primary role of systems integration is to put together teleconferencing systems using equipment manufactured by other companies.

MIRC's numbers show that the systems integrators' distribution channel accounts for more than 25% of the market for videoconferencing coder/decoders. This distribution channel for videoconferencing coder/decoders is expected to rise from $1.4 million in 1983 to $20 million in 1993.

Coder/decoder vendors themselves also sell integrated room packages. Vendors that specialize in integrated room equipment and design include Hoppman Corp. of Chantilly, Va.; Pierce-Phelps, Inc. of Philadelphia; Videoconferencing Systems, Inc. of Norcross, Ga.; and Vidicom of Westlake Village, Calif.

Other vendors, such as Nynex Computer Services, can provide turnkey videoconferencing services, and thus act as a single point of contact for the user. Turnkey ser-

(continued on page 44)

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THE HANDOUT MATERIAL: All attendees will receive copies of most of the presentations, a catalog of all exhibitor names, addresses and products, and a list of all attendees with name, title, company and address.

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THE CONFERENCE SPONSOR: The Association of Data Communications Users, Inc. (ADCU), a national user's organization of over 200 member firms, mostly Fortune 1000 companies. ADCU is incorporated in the State of New York with administrative offices in Minnesota and conducts regional and national conferences where members and non-members can increase their skills and seek advice and solutions to their data communications problems.

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ADCU member company	$350
Non-member company	$450

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Call (612) 881-6803 for information.

CONFERENCE REGISTRATION

Conference fee covers entire conference including NIU-Forum ISDN sessions through Friday, June 16. In the event of cancellation, entire registration fee for the conference will be refunded if notice is received before June 5.

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(continued from page 43)

vice includes facility design, equipment integration, implementation and transmission services.

Long-distance carriers such as AT&T, US Sprint Communications Co. and MCI Communications Corp. provide transmission services for videoconferencing. US Sprint offers a public videoconferencing service called The Meeting Channel. In addition, hotel chains in many major cities offer public videoconferencing.

The New York County district attorney's office is about to begin a videoconferencing project using Nynex as a systems integrator. The equipment to be used includes coder/decoders from PictureTel and Compression Labs, Inc. of San Jose, Calif. These units will be integrated into self-contained modules built by Pierce-Phelps. The district attorney's office leases the turnkey service from Nynex Computer Services.

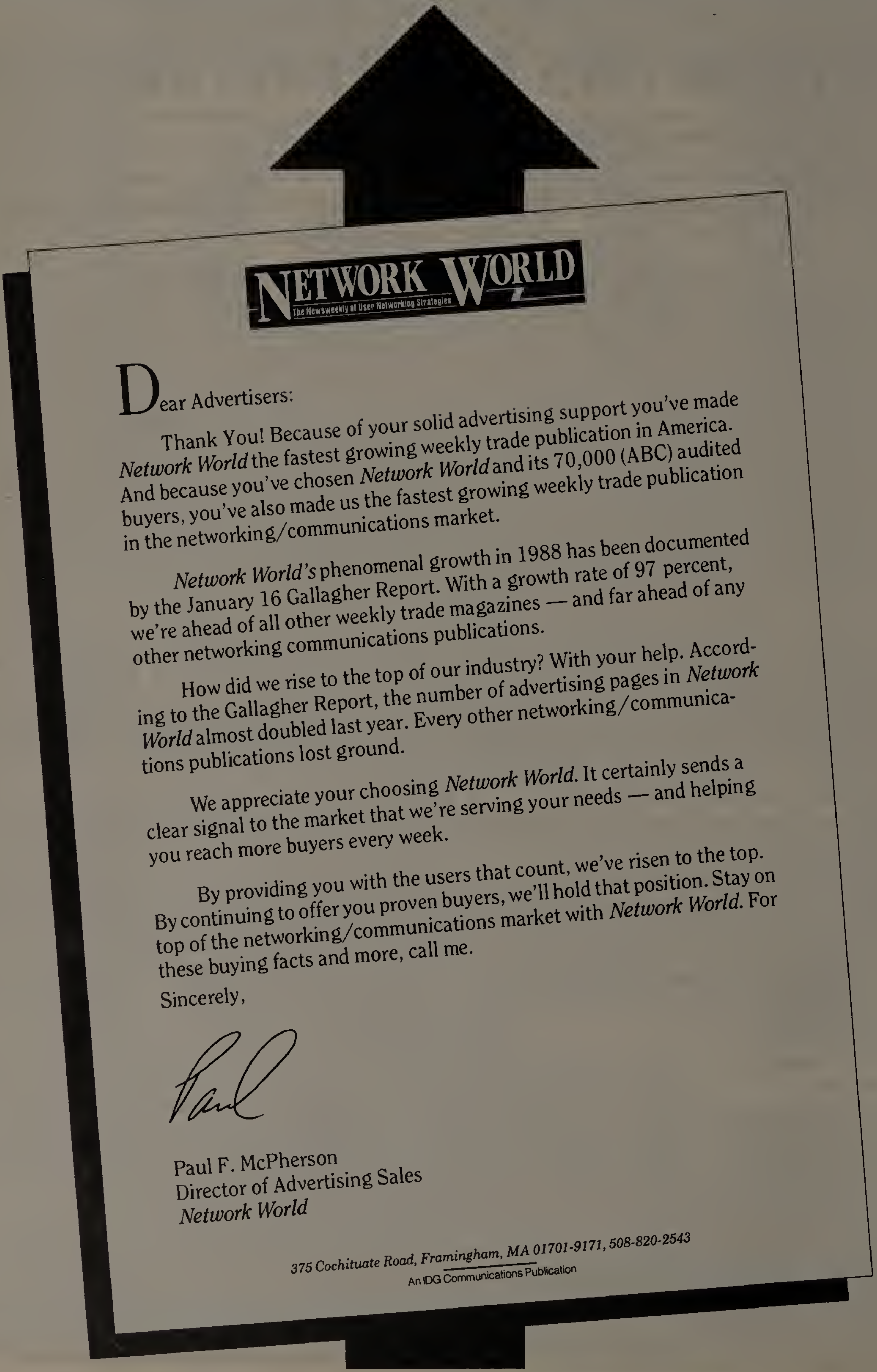
The purpose of the system is to reduce the time between the arrest and arraignment of prisoners. The videoconferencing facilities at the Manhattan district attorney's office are linked over T-1 lines with similar independent facilities at the 32nd Police Precinct in upper Manhattan and the Port Authority bus terminal in midtown Manhattan.

"Currently, the arresting police officer must physically travel to the assistant DA's office to file charges," says Len Rubin, MIS director for the district attorney's office. "The time can be anywhere from one to three hours. The videoconferencing link will speed up this process."

Nynex Computer Services is putting together a videoconferencing system that incorporates five independent video modules, each with camera, monitor and audio system. Each independent link uses one-quarter of the T-1 line bandwidth. A room at the district attorney's office was acoustically treated and partitioned to allow five simultaneous full-duplex interviews between the office and the other two locations.

Market forces and soon to be established standards are having positive effects on the videoconferencing industry. Although in-person meetings will never be entirely replaced, the economics of electronic meetings is well worth evaluating. ◼

Sharma is president of Telesyne, Inc., a San Jose, Calif.-based telecommunications and network design firm.



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A yen for networking

continued from page 26

nese to do business only among themselves.

New entrants to the Japanese markets are therefore well-advised to create an alliance with a Japanese company. The form that such an alliance should take is entirely flexible: trading partner, joint venture or subsidiary.

The point is that user companies will need Japanese people to help them do business in Japan. This is also true for the network manager procuring communications services. The assistance of a native business partner is invaluable.

Communications professionals can also get help from the U.S. Embassy. While the embassy staff is not prepared to conduct users' business for them, it can help resolve regulatory conflicts and identify U.S. companies doing business in Japan, as well as recommend translation and other business services.

The task of creating networks in Japan for U.S. companies can be broken down into two activities: either building networks wholly confined by Japanese boundaries or building international networks. These categories are important because the type of network dictates the kind of services available and the choice of equipment needed:

- Building an international network that involves Japan will likely take the form of extending a U.S. network into Japan and perhaps expanding it to include Singapore, Hong Kong or London. Network managers should install their U.S. products in Japan to ensure the highest level of compatibility. This may require the purchase of an interface device or product conversion by the vendor.
- Japan has a regulated international carrier, Kokusai Denshin Denwa Ltd. (KDD), whose services users will be required to utilize.
- Wholly Japanese networks can be designed using a variety of Japanese communications products and carrier services, including many advanced products and services not yet available in North America.
- Japan has a deregulated telecommunications environment; therefore, users can choose among many carriers in addition to Nippon Telephone and Telegraph Ltd. (NTT), the prederegulation monopoly, including a variety of value-added network (VAN) providers.

> User companies will need Japanese people to help them do business in Japan. This is also true for the net manager procuring communications services.

▲▲▲

Meet the players

Japan has two types of domestic carriers (see Figure 1, page 48). Type I carriers provide basic transport services and re-

(continued on page 48)

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(continued from page 44)

quire approval to do so from the Japan Ministry of Posts and Telecommunications. The largest Type I carrier is NTT, but users should evaluate the new carriers, which are aggressive in their service offerings and pricing.

Type II carriers provide enhanced services, including large data base-oriented services. These carriers use the Type I carriers for transport and include International Telecom Japan, Inc., Kyodavan and NRI & NCC Co., Ltd., which is the private international network for Nomura Securities Co. Ltd., the largest brokerage firm in the world.

Japanese Type I carriers
Figure 1

Carrier	Lead partners	Facility type
Daini Denden Corp.	Kyocera International, Inc.	Private microwave
Nihon Telecom	Japan National Railways Corp.	Fiber optics along railway right-of-way
Teleway Japan, Inc.	Japan Public Highway Corp.	Fiber optics along highway right-of way
Japan Communications Satellite Co., Ltd.	Hughes Communications, Inc., Mitsui & Co. Ltd., C. Itoh & Co., Ltd.	Two Ku-band satellites
Satellite Japan Corp.	Sony Corp.	RCA Communications satellites
Mitsubishi Corp. joint ventures (name to be established)	Mitsubishi Electric Corp., Nippon Telephone and Telegraph Ltd. (NTT), Ford Aerospace Satellite Services Corp.	Ford Aerospace satellites

Type I carriers in Japan will compete with NTT, the prederegulation monopoly.
SOURCE: JACK KELLY, NEWPORT, R.I.

Today, the only international carrier in Japan is KDD, although the Type II VANs are allowed to build international networks. (A new international VAN service was launched by K-Network International, Inc. on April 26.) Current discussion in Japan deals with the question of whether a carrier should be allowed to invest in PTAT-8, the transpacific fiber cable that is expected to be available in 1990. If this is allowed, PTAT-8 would compete with KDD for international business. It is also possible that a satellite-based company would be allowed to provide competition to KDD.

A wide variety of network services is available from these carriers. Domestically, analog switched and private-line services are available, as is DDX, the low-speed digital service equivalent to AT&T's Dataphone Digital Service. Data rates of 2,400, 4.8K, 9.6K and 56K bit/sec are available with DDX.

NTT offers Super Digital, a high-speed digital service with a wide variety of data rates: 64K, 112K, 192K, 384K, 512K, 768K, 1.544M, 3.088M and 6M bit/sec.

NTT also offers a digital drop-and-insert service for networks between the major cities. This service is useful due to the point-to-point nature of most Japanese networks, the result of the long, narrow geographic layout of Japan. Communications professionals should heed this last point: Alternate routing reliability is hampered because the layout of the cities does not lend itself to mesh networks, but the availability of "fractional" service does allow for cost-effective fallback.

ISDN today

One of Japan's national strategies is to be a worldwide leader in Integrated Services Digital Network provision; NTT today provides Basic Rate Interface ISDN (two bearer channels and a signaling channel) service. This service, called Intelligent Network Service 64, is an ISDN network that provides videotex, high-speed facsimile, home shopping, videoconferencing, medical education, voice and message store-and-forward, motion picture distribution, event listings and directory services.

A wide variety of ISDN terminals, including Group IV facsimile machines, ISDN digital telephones, videoconferencing tools and videotex terminals, is available. NTT claims that Primary Rate Interface ISDN (23 bearer channels and a signaling channel) will be available in 1989.

Internationally, KDD offers the communications network designer a wide variety of voice, telex, facsimile and telegram services, as well as advanced digital services including leased-line, packet- and circuit-switched, electronic mail and videoconferencing.

New interface requirements

While the Japanese digital network provides data rates similar to North American T-1 and fractional T-1 offerings, technical differences make U.S. channel banks, private branch exchanges, multiplexers, and other T-1 and digital data service devices incompatible with the Japanese digital network.

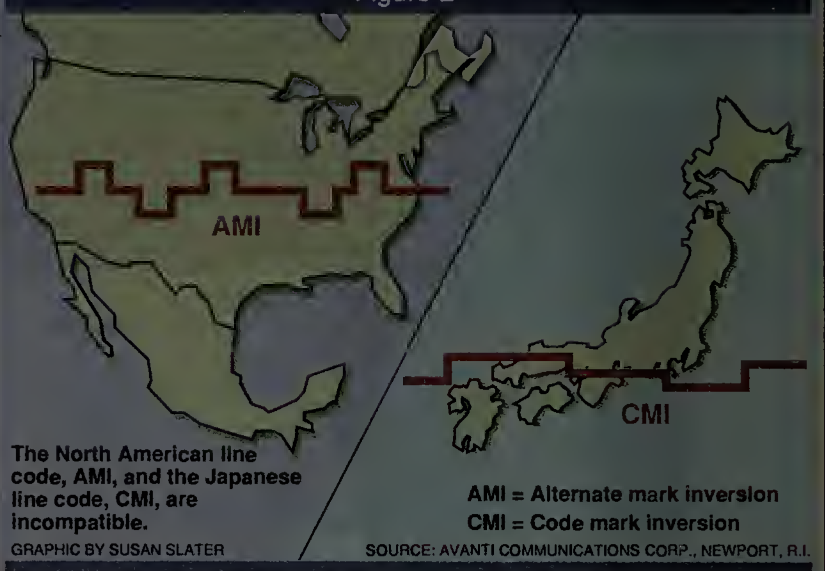
In Japan, as in North America, the data rate of 1.544M bit/sec includes a framing bit inserted in every 193 bits of data. However, this frame structure is totally different in Japan. In North America, the frame is either a repeating pattern (called D4) or the extended superframe format, which has cyclic redundancy check and a communications path. However, the Japanese method is to use this bit sequence to transmit frame, alarm and status information. The two formats are not interoperable.

Another difference is the line code used to maintain synchronization. In North America, the line code used is alternate mark inversion. The Japanese code, called code mark inversion, is different (see Figure 2, this page).

Interface connection requirements differ among the various vendors and often for the different services. For example, an interface to the KDD point-of-presence for digital services at 64K bit/sec and less is specified as V.11 or V.35. Faster than 64K bit/sec is specified at either of these or G.703. NTT specifies a 15-pin connector with G.703.

The data rates below 1.544M bit/sec offered by NTT are based upon N x 64K increments. This is good news for managers who purchased multiplexers that are already digital access and cross-connect system-formatted and who channelize data in N x 64K increments in their North American offerings.

AMI/CMI comparison
Figure 2



The North American line code, AMI, and the Japanese line code, CMI, are incompatible.

AMI = Alternate mark inversion
CMI = Code mark inversion

GRAPHIC BY SUSAN SLATER
SOURCE: AVANTI COMMUNICATIONS CORP., NEWPORT, R.I.

These manufacturers have less work to do to achieve compatibility with Japanese digital networks. Products that do not meet these universal N x 64K bit/sec standards may still send the entire 1.544M bit/sec over the Japanese network, but users lose the flexibility of "fractional" data rates or the central office-based drop-and-insert capabilities that are so prevalent in Japan.

This information is especially important for communications managers who want to establish a presence in Japan through the extension of their U.S. networks. While wholly Japanese networks can be created using Japanese products, without concern for eventual connection to U.S. devices, true international networks will be more efficient if the network manager can maintain compatibility between all communications products. Standards compatibility becomes a strategic advantage in this environment.

The installation of the transpacific fiber cable will dramatically increase the capacity — and reduce the cost — of circuit bandwidth from the U.S. to Asia.

▲▲▲

Trends

Important trends will also influence communications professionals who enter the Japanese market. In just the last four years, trade restrictions on importing products made in the U.S. have lessened significantly. The Pacific Basin in particular and Asia as a whole are resurging economically, exposing large markets of consumers with growing appetites. These and other trends ensure success for the properly managed and committed U.S. business. Effective communications systems and networks will be a critical part of any success.

Trends within the information industry also influence the creation of networks. As previously mentioned, the installation of the transpacific fiber cable will dramatically increase the capacity — and reduce the cost — of circuit bandwidth from the U.S. to Asia. This installation may also fuel a decision by the Ministry of Trade and Industry to provide competition to KDD for international business.

Communications professionals can expect a broader range of services to be tailored to their specific needs. The strong Japanese interest in ISDN will motivate increased use of ISDN services and standards in Japan and around the world.

Many U.S. businesses are now aware of the existing and developing markets in Japan. Network managers can provide valuable service, strategic competitive advantage and contribution to the bottom line through the creation and effective use of international networks. ◘

Networking in the land of the morning calm

Communications professionals planning to build networks in Korea will find a nation in transition, as deregulation — which is not yet implemented in the country — takes hold. Korea still has a government monopoly over the telecommunications industry. The Korea Telecommunications Authority administers the voice network, and Data Communications Corp. of Seoul, Korea, administers Korea's data network.

The Ministry of Communications recently published an in-depth report recommending the opening of the domestic telecommunications industry. Specifically, the report promotes the establishment of value-added networks (VAN) and the development of private enterprises to compete for carrier and customer premises equipment business.

This is good news for U.S. network managers, who will soon have a wider selection of products and services with which to build networks.

The Korea Public Telephone network was built by the U.S. after the Korean conflict, so the services and equipment, including T-1-based carrier facilities, will be familiar to U.S. communications managers. However, the ministry report recommends that Korea build an Integrated Services Digital Network based on Europe's 2.048M bit/sec standard.

Notwithstanding current monopolistic practices, many large Korean companies have installed or plan to install competing networks with the monopoly carriers. The Korea Electric Power Co. has a large private network installed and, of course, valuable right-of-way access. Korean Air Lines, Daewoo Corp., Samsung Group, Korean Travel Information Co. and some banks, securities and department stores have expressed an interest in building VANs.

— *Jack Kelly*

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C. Please Answer ALL Questions, Sign & Date the Form.

1. Industry: (check one only)

01. ☐ Manufacturers (other than computer/communications)
02. ☐ Finance/Banking
03. ☐ Insurance
04. ☐ Real Estate
05. ☐ Healthcare Services
06. ☐ Legal
07. ☐ Hospitality
08. ☐ Retail/Wholesale Trade
09. ☐ Transportation
10. ☐ Utilities
11. ☐ Education
12. ☐ Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
13. ☐ Government State/Local
14. ☐ Government Federal
15. ☐ Military
16. ☐ Aerospace
17. ☐ Consultants (independent)
18. ☐ Carriers
19. ☐ Interconnects
20. ☐ Manufacturers (Computer/Communications)
21. ☐ VAR/VAD/Systems House
22. ☐ Distributor, Computer Related
23. ☐ Distributor, Communications Related
24. ☐ Other ______________________

2. Job function (check one only)

1. ☐ Networking Management (Responsible for both voice & data)
2. ☐ Data Communications Management (Responsible for data only)
3. ☐ Telecommunications Management (Responsible for voice only)
4. ☐ MIS Management (VP,Dir,Department Head)
5. ☐ Corporate Management (Chairman, President, Owner, General Manager, CEO, CIO, VP)
6. ☐ Financial Management
7. ☐ Engineering Management
8. ☐ Consultant (Independent)
9. ☐ Other______________________

3. Your primary responsibility (check one only)

1. ☐ Data Networking
2. ☐ Voice Networking
3. ☐ Both
4. ☐ None

4. Is your network: (check all that apply)

LOCAL AREA NETWORKS
1. ☐ Local (within building)
2. ☐ Local (in a campus environment)

WIDE AREA NETWORKS
3. ☐ International
4. ☐ National
5. ☐ Regional (several states)
6. ☐ Metropolitan

5. Which transmission media do you use in your network: (check all that apply)

Public:
1. ☐ Switched-Based (DDD,Wats,Megacom,etc.)
2. ☐ Leased Line (not including T-1)
3. ☐ T-1
4. ☐ T-3
5. ☐ Digital Data Service

Private:
6. ☐ Satellite
7. ☐ Microwave
8. ☐ Fiber Optic

6. Which of the following vendors will you consider buying your PBX/Central Office Switch from in the next 12 months? (check all that apply)

	A PBX	B COS	
01.	☐	☐	AT&T
02.	☐	☐	ALCATEL
03.	☐	☐	CONTEL
04.	☐	☐	ERICSSON
05.	☐	☐	FUJITSU
06.	☐	☐	HARRIS
07.	☐	☐	HITACHI
08.	☐	☐	IBM/ROLM Systems Division
09.	☐	☐	INTECOM
10.	☐	☐	MEMOREX TELEX
11.	☐	☐	MITEL
12.	☐	☐	NEC
13.	☐	☐	NORTHERN TELECOM
14.	☐	☐	SIEMENS
15.	☐	☐	STROMBERG-CARLSON
16.	☐	☐	TOSHIBA
17.	☐	☐	OTHER

7. What operating systems do you utilize? (check all that apply)

1. ☐ CICS
2. ☐ IBM DOS
3. ☐ MVS
4. ☐ UNIX
5. ☐ VM
6. ☐ VMS
7. ☐ OTHER ______________

8. Please indicate by vendor the number of mainframes/minicomputers installed in your network.

VENDOR	MAIN-FRAMES A	MINIS B
01. DEC		
02. IBM		
03. AMDAHL		
04. AT&T		
05. HONEYWELL BULL		
06. NCR		
07. DATA GENERAL		
08. WANG		
09. HEWLETT PACKARD		
10. PRIME		
11. TANDEM		
12. UNISYS		
13. CONTROL DATA		
14. OTHER		

9. Please indicate by vendor the number of microcomputers:

A) Presently installed in your network.
B) The approximate quantity you plan to install in the next 12 months.

MICROCOMPUTER VENDOR/ WORKSTATION	PRESENTLY INSTALLED A	PLAN TO INSTALL NEXT 12 MONTHS B
01. COMPAQ		
02. PCs based on 80386 chip		
03. IBM (PC,XT,AT)		
04. IBM (PS/2)		
05. APPLE (Macintosh)		
06. AT&T		
07. SUN		
08. APOLLO		
09. LAPTOPS		
10. OTHER		

10. What is your host network architecture? (check all that apply)

1. ☐ SNA
2. ☐ DECNET
3. ☐ OSI
4. ☐ GOSIP
5. ☐ MAP/TOP
6. ☐ OTHER ______________

11. What is your LAN Operating System? (check all that apply)

01. ☐ 10NET
02. ☐ 3COM (3+, 3+open)
03. ☐ APPLETALK
04. ☐ BANYAN (VINES)
05. ☐ DCA (IRMALAN)
06. ☐ IBM (OS/2 EXTENDED EDITION)
07. ☐ IBM (PC Network)
08. ☐ MICROSOFT (LAN MANAGER)
09. ☐ NOVELL (NETWARE)
10. ☐ NOVELL (NETWARE MAC)
11. ☐ TOPS (TOPS)
12. ☐ OTHER ______________________

12. What is your LAN environment? (check all that apply)

1. ☐ Token Ring
2. ☐ ARCNET
3. ☐ Ethernet
4. ☐ Starlan
5. ☐ Other______________

13. What is the scope of your involvement in purchase decisions for Network/Communications products + services? (check all that apply)

1. ☐ Organization-wide
2. ☐ Subsidiary/division wide
3. ☐ Department-wide
4. ☐ For multiple organizations (consultants)
5. ☐ Other ______________________

14. For which network hubs outside of the US do you have purchasing influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East

15. Write below the total number of sites for which you have purchase influence? ☐

16. Check ALL that apply in columns A and B

A) I am presently involved in the purchase process for the following products/services:
B) I plan to purchase the following products/service in the next 12 months:

	Presently Involved A	Plan to Purchase B	- COMPUTERS/PERIPHERALS: -
01.	☐	☐	Micros
02.	☐	☐	Minis
03.	☐	☐	Mainframes
04.	☐	☐	Front End Processors
06.	☐	☐	Terminals
07.	☐	☐	Printers
	A	B	- SOFTWARE: -
10.	☐	☐	Network Management
11.	☐	☐	Micro to Mainframe
12.	☐	☐	Network Security
13.	☐	☐	Call Accounting
14.	☐	☐	Data Base Management
15.	☐	☐	Systems Software
16.	☐	☐	Communications Software
17.	☐	☐	Applications Software
18.	☐	☐	Network Operating Systems Software
	A	B	- DATA COMMUNICATIONS -
20.	☐	☐	Modems (over 9.6kbps)
21.	☐	☐	Modems (under 9.6kbps)
22.	☐	☐	T-1 multiplexers
23.	☐	☐	Other Multiplexers
24.	☐	☐	Data Switches
25.	☐	☐	Matrix Switches
26.	☐	☐	Packet Switches
27.	☐	☐	Local Networks
28.	☐	☐	Protocol Converters
29.	☐	☐	Network Management Systems
30.	☐	☐	Terminal Emulation Boards
31.	☐	☐	Facsimile Machines
32.	☐	☐	Diagnostic Test Equipment
33.	☐	☐	Data Service Unit
	A	B	- TELECOMMUNICATIONS -
40.	☐	☐	PBXs (over 1000 lines)
41.	☐	☐	PBXs (200 - 1000 lines)
42.	☐	☐	PBXs (under 200 lines)
43.	☐	☐	Key Systems
44.	☐	☐	Automatic Call Distributors
45.	☐	☐	Voice Messaging Systems
46.	☐	☐	Channel Service
48.	☐	☐	Short Haul Bypass Equipment (Microwave, Infrared, etc.)
	A	B	- TRANSMISSION SERVICES -
50.	☐	☐	Switched Voice
51.	☐	☐	Dedicated Leased Line
52.	☐	☐	T-1
53.	☐	☐	T-3
54.	☐	☐	Digital Data
55.	☐	☐	Packet Switched
56.	☐	☐	Centrex
57.	☐	☐	Central Office LAN
58.	☐	☐	Satellite
59.	☐	☐	Fiber Optic
60.	☐	☐	On-Line Information
61.	☐	☐	Systems Integration
62.	☐	☐	Network Optimization
63.	☐	☐	Microwave
64.	☐	☐	Cables, Connectors, Baluns
65.	☐	☐	ISDN
66.	☐	☐	EMail

17. Estimated value of networking equipment and services:

A) Which you helped specify, recommend or approve in the last 12 months?
B) Which you plan to help specify, recommend or approve in the next 12 months?

	A	B	
01.	☐	☐	$25 million and over
02.	☐	☐	$20 - $24.9 mil
03.	☐	☐	$10 - $19.9 mil
04.	☐	☐	$5 - $9.9 mil
05.	☐	☐	$1 - $4.9 mil
06.	☐	☐	$500,000 - $999,999
07.	☐	☐	$250,000 - $499,999
08.	☐	☐	$100,000 - $249,999
09.	☐	☐	$50,000 - $99,999
10.	☐	☐	under $50,000

18. Estimated gross annual revenue of your entire company/institution: (check one only)

1. ☐ over $10 billion
2. ☐ $1 to $9.9 bill
3. ☐ $500 mil to $1 bill
4. ☐ $100 to $499.9 mill
5. ☐ $50 to $99.9 mill
6. ☐ $10 to $49.9 mill
7. ☐ $5 to 9.9 mill
8. ☐ under $5 mill

19.

A) Estimated number of employees for your entire corporation: (check one in column A)
B) Estimated number of employees at this location: (check one in column B)

	A	B	
1.	☐	☐	over 10,000
2.	☐	☐	5,000 - 9,999
3.	☐	☐	2,500 - 4,999
4.	☐	☐	1,000 - 2,499
5.	☐	☐	500 - 999
6.	☐	☐	under 500

20. When do you plan to implement ISDN?

1. ☐ Currently testing
2. ☐ 12 - 24 months
3. ☐ 24 - 36 months
4. ☐ 36 + months
5. ☐ not implementing

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Group to bolster technology

continued from page 15

changes in the multitude of other applications used to access Lotus spreadsheet data, she said.

Marrying object technology to network technology simplifies interoperability throughout a network, Wallis said. "The goal is to be able to use anything from anywhere. That's easy to state but tough to implement," she said. "[Object] technology promises to do that."

OMG's work will be to specify and promote an object-oriented environment for application development.

The group said OMG will adopt a core of commercial products and technologies to create this type of environment.

The first part of that core will be the Object Management Facility (OMF) of HP's NewWave product, an MS-DOS based programming environment for creating object-oriented applications. Companies such as DG will incorporate OMF in future products. NewWave will eventually be implemented for the Unix and IBM OS/2 operating systems, said HP's Ernst.

One feature of NewWave is its ability to encapsulate existing DOS applications with additional code that will let these applications run in an object-oriented environment, Ernst said.

The new organization plans to propose that the object management facility be incorporated in the Open Software Foundation's (OSF) user interface specification, part of OSF's work to create a standards-based software environment, Wallis said.

As a practical technology, object management is still in its infancy, she said. "We're in the position to do something right the first time. We can put something together from the start with enough vendor support to make it interesting" to end users, according to Wallis.

Other members of OMG are Canon, Inc., Gold Hill Computers, Inc., Philips' International B.V., Prime Computer, Inc., Soft-Switch, Inc., Sun Microsystems, Inc., Unisys Corp. and 3Com Corp. ◘

Users give mixed marks to ISDN

continued from page 2

at McGraw-Hill, Inc. in New York, said he came to do his homework on ISDN. McGraw-Hill, he said, is interested in using ANI for its customer service operations. Although Hennelly said he was impressed by the exhibits, he felt they might be a little misleading.

"[Vendors] showed some super applications, but they made it look easier to implement ISDN than it really is," he said.

Hennelly said the software needed to support ISDN applications would be expensive and would require a significant commitment by upper management. He also said the cooperation and coordination of many different groups within a company would be needed to implement ISDN.

ANI fans

The users who were most committed to ISDN were those who are eager to implement ANI in their customer service operations.

"For us, it's a question of how fast we can get ANI up and running," said Thomas Pettibone, vice-president of New York Life Insurance Co. in New York. "We are here to learn as much as we can about ISDN so we can develop our own applications once we bring ANI on board," he said.

Other users were intrigued by the full range of ISDN applications on display at the demonstration.

"Your mind can run wild with the applications possible with ISDN. The showcase showed a few excellent ones," said a communications manager at a leading U.S. trucking company who asked not to be named.

The manager was impressed with an AT&T demonstration of two-way videoconferencing over dial-up lines. "AT&T didn't need to prearrange a satellite or high-capacity terrestrial link to transmit the voice and video signal; it just dialed up a user," he said.

While the demonstration attempted to show that ISDN information can be transmitted between different vendors' central office switches, only Southwestern Bell Telephone Co. transmitted ISDN calls through all four switches used to support vendor exhibits.

The majority of vendors did not link their ISDN demonstrations to other exhibits, which would have demonstrated the full power of ISDN. Instead, vendors generally routed ISDN traffic among their own equipment through a single switch. Some vendors maintained Primary Rate Interface links between their ISDN booths and their exhibits on the show floor..

A full rollout of ISDN would require widespread implementation of ISDN-ready central office switches. Without that, users become isolated on "islands of connectivity," outside of which they cannot transmit ISDN information.

Most users at the showcase said they will be more inclined to implement ISDN as it becomes more widely available. ◘

PHOTO ©1989 STEVE SAXTON/GAMMA LIAISON

ICA attendees view videoconferencing at ISDN showcase.

Users, carriers split over progress

continued from page 1

carriers with setting up task forces to identify network vulnerabilities but say action is not being taken swiftly enough. Users say they want to see more immediate changes made to network architectures.

$80 million plan

In March, Illinois Bell announced plans to invest $80 million over the next five years to provide additional protection from potential service disruptions under what it dubbed the Ameritech Network Protection Plan. Illinois Bell is a local operating company of Ameritech.

Illinois Bell plans to enhance its network in major cities to be better prepared for failures.

To date, Ameritech's efforts have been focused mainly on fire prevention programs, said Jay Krakora, senior director of operations planning for Ameritech Services, Inc., the planning unit for Ameritech's five telephone companies. Ameritech's operating companies have begun inspecting flexible armored cables, which were among the cables suspected of igniting the Hinsdale fire, and are working more closely with local fire departments to educate them about central office layouts and how to fight fires without destroying communications equipment, he said.

According to a report on the fire sponsored by the Illinois Commerce Commission, an electrical problem started the Hinsdale blaze and Illinois Bell's failure to follow its own fire-reporting procedures delayed the response of firefighters ("Report lays blame for Hinsdale fire," *NW*, March 13).

Southwestern Bell Telephone Co.'s first response in the aftermath of the fire was to set up a task force on service continuity, said Charles Hotchkiss, division manager for switching. Southwestern Bell plans to spend tens of millions of dollars over the next three years implementing the group's recommendations. The company also plans to move to a ring network architecture that would allow calls from a central office to be routed in at least two directions, he said.

"What [the Hinsdale fire] taught us was to rethink our strategy and build it around the worst case instead of the usual case," Hotchkiss said.

Overall, carriers said they are better equipped today to handle disaster prevention and recovery than they were a year ago.

"Certainly, Hinsdale brought to the industry a heightened awareness of the possibility for this type of disaster," said Donna Lee, acting director of network operations and engineering for AT&T's Network Operations Division. "The carriers and our customers benefit from that."

John Powers, a principal at Powers, Tritsch & Associates, Inc., a Wellesley Hills, Mass.-based consulting firm, applauded the carriers for forming task forces and mapping network reliability plans.

But, he said, they have not achieved much in the past year.

PHOTO COURTESY FORENSIC TECHNOLOGIES INTERNATIONAL CORP.

Fire-damaged cables shortly after the Hinsdale central office fire.

"The task of revamping their network architectures is so large and would be so expensive that it's not surprising little progress has been made," he said.

David Nevers, senior telecommunications engineer for Covia Partnership, Inc. in Rosemont, Ill., said he is satisfied with the plans Illinois Bell has announced but has seen no results so far. "The only problem I have is that the time frame is long," he said.

Covia Partnership, which owns the Apollo airline reservation system developed by United Air Lines, Inc., experienced disruptions in its voice and data traffic to travel agents in Chicago's western suburbs because of the Hinsdale fire, Nevers said. As a result, the company has been looking for a way to bypass local telephone companies in case of a disaster, he said. ◘

MCI wins big net contract

continued from page 7

based Westinghouse, the competition was so tough that the carriers went through three rounds of bidding before coming up with proposals that met Westinghouse's stringent network design and price demands.

"This was a rough-and-tumble battle," Edison said. "Each carrier worked hard to get this contract." He said MCI was selected because it offered the lowest price and because Westinghouse was pleased with the quality of its current MCI service.

According to Edison, collocation will help Westinghouse cut communications costs by avoiding local access charges.

Edison said that under the arrangement with MCI, Westinghouse will continue to reduce its communications expenditures by about 5% annually, a trend that the company has maintained for the past several years.

Currently, Westinghouse operates a 120-node integrated voice/data T-1 backbone that supports another 600 satellite sites with lower speed dedicated lines.

The company also employs MCI's Vnet virtual private network service to provide voice capabilities to about 1,000 offices, Edison said.

MCI will continue to supply Vnet, but it will also take over most of Westinghouse's private-line services.

In all, the carrier will get about two-thirds of Westinghouse's long-haul expenditures, Edison said, with the rest split between AT&T, US Sprint and others. These expenditures are currently divided evenly between the three major carriers.

As part of the deal, Westinghouse will install five Northern Telecom, Inc. DMS-250 central office switches in MCI offices. These switches will handle traffic that is currently managed by an AT&T Electronic Tandem Network supported by AT&T System 85 private branch exchanges. ◘

ICA show goers want help on net control

continued from page 2

ISDN technical sessions played to standing-room-only crowds in the convention center's largest conference rooms.

User reaction to the ISDN hoopla was mixed. Some attendees were impressed by what they saw and heard about the integrated voice and data technology.

"In my mind, the exhibits and technical sessions here prove that ISDN no longer stands for 'I still don't know,' " said Greg Harr, vice-president of telecommunications at New York-based Citibank, N.A.

But others said ISDN still has a way to go. "ISDN is like life," said Murdic Coleman, director of computer services at Wayne State University in Detroit. "First, it crawls. Soon it will walk. Someday, years from now, it will really run."

Focus on net control

Network management was another high-profile issue at ICA. Users scoured the exhibit floor looking for products to help them monitor and control their networks better. Vendors offered impressive displays. AT&T had an 8,000-sq.-ft. exhibit — the largest at the show — featuring its Unified Network Management Architecture (UNMA) products.

At its booth, IBM spotlighted its NetView integrated network management product. Northern Telecom, Inc. and Digital Communications Associates, Inc. followed through on a promise made earlier in the year to link their wide-area network management systems through Open Systems Interconnection protocols (see story, page 6).

But users expressed reservations about the current state of network management.

"UNMA and NetView really don't address network management in the way we want," said David Edison, executive vice-president of corporate information and communications systems at Pittsburgh-based Westinghouse Electric Corp. (see story, page 7). "So we designed our own network management."

"We use NetView and it works," said Burton Levine, senior teleprocessing analyst at Hoechst Celanese Corp. in Somerville, N.J. "But we just went through a merger, and it would be nice to get a tool that handles the multivendor environment better. UNMA is supposed to do that, but it's not user-friendly enough yet."

International networking also figured prominently at the ICA show. Among other announcements, US Sprint Communications Co. unveiled new international services (see story, page 4).

In addition, there were more than twice as many educational sessions on international issues — a total of nine — than on any other subject. There were three sessions on international networking at last year's conference. ◘

MCI adopts two-pronged strategy

continued from page 1

band signaling, which will let customers use existing facilities, said John Todd, MCI's director of network management services.

ISDN services typically require out-of-band signaling and use the CCITT Q.931 protocol.

MCI detailed three ISDN-equivalent services:

- MCI Two-Way Access allows users with dedicated access lines to carry inbound and outbound traffic simultaneously over the same channel. This feature will be available to users of the company's 800, 900, Vnet virtual private network and Prism services by the fourth quarter.
- MCI 800 Enhanced Services Package will give calling number identification with incoming calls to users with dedicated access. This feature will be available in the fourth quarter.
- MCI Digital Reconfiguration Service, which will be available in August, will enable users with dedicated access to reconfigure routing and termination of 56K bit/sec and T-1 channels in only a few minutes. MCI said it plans an upgrade that will support dynamic reconfiguration.

The service is similar to AT&T's Call-By-Call Service Selection capability, which is supported by the carrier's Primary Rate Interface service.

MCI said it will offer three standard ISDN services that correspond to the ISDN-equivalent services: MCI ISDN Call-by-Call, MCI ISDN Enhanced Services Package Service and MCI B-Channel Control.

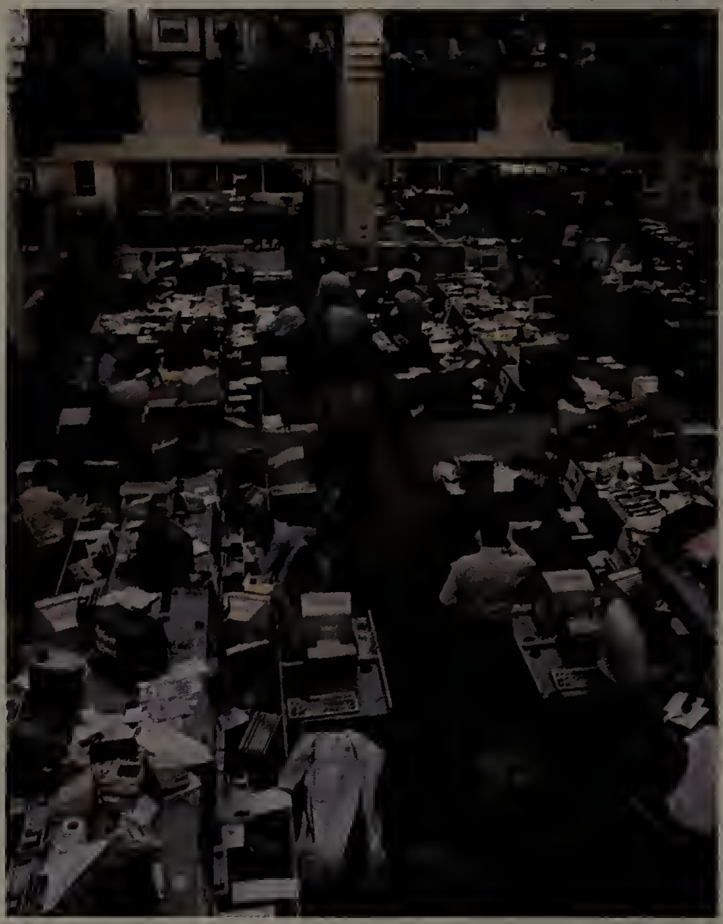
In addition, MCI will introduce ISDN Primary Rate Interface service next year. The company said it will offer a Primary Rate Interface equivalent this year with its Digital Gateway, which provides T-1 access to the MCI network.

In order to use the ISDN-like services, users will need to upgrade software in their private branch exchanges. MCI said it is working with vendors to develop the necessary software. The carrier has already reached agreements with Northern Telecom, Inc. and Rockwell International Corp. to develop software for their PBXs. The company is also talking to Rolm Systems, Inc. and hopes to work with AT&T to develop PBX software.

Although MCI has decided to begin providing ISDN-like services via nonstandard technology, company officials insist the carrier is committed to ISDN deployment.

In the future, as ISDN develops and new applications emerge, there will probably be features that can be provided only in an ISDN-only environment, Todd said. "We're trying to build this flexible architecture so [customers] can take advantage of a variety of things today," he said.

John McQuillan, president of McQuillan Consulting in Cambridge, Mass., suggested that MCI may be offering the ISDN-equivalent services as a means to test what users of ISDN applications want. "No one really



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Telenet upgrades equipment to improve public data net service

By Anita Taff
Washington Bureau Chief

DALLAS — Telenet Communications Corp. last week announced it is upgrading the switches and modems in its packet-switched network to boost the performance of its public data net services.

The company is replacing existing packet switches in its backbone with TP4/III switches, which it manufactures, beginning the migration to CCITT V.32-compatible 9.6K bit/sec modems, according to company President Paolo Guidi.

The TP4/III is expected to improve network throughput significantly because it is based on a faster microprocessor than Telenet's current switches. The TP4/III can process 8,000 packets and 125 calls per second, compared to the 2,400-packet and 40-call-per-second capacity of the current switches.

TP4/IIIs will be installed this year in Atlanta, Boston, Chicago, Dallas, Denver, Detroit, Los Angeles, New York, Vienna, Va., and Washington, D.C.

Telenet decided to adopt V.32 because it is becoming the dominant standard among manufacturers of 9.6K bit/sec modems, Guidi said.

The modems can support both synchronous X.25 transmissions and Telenet's Asynchronous Dial Service at 9.6K bit/sec. The V.32 modems will be tested in June in Boston, Chicago, Los Angeles, New York and Washington.

Telenet also announced plans to expand the reach of its network. The company has signed agreements to interconnect its Telemail electronic mail service with AT&T's AT&T Mail and MCI Communications Corp.'s MCI Mail (see "AT&T, MCI to link with Telenet Telemail," page 9).

Telenet also increased from 16 to 33 the number of countries in which users can purchase the company's global access management service. The service provides a single point of contact for ordering service and billing.

In other news, Telenet announced it has won a contract with its parent, US Sprint Communications Co., to supply Apple Computer, Inc. with voice and data services. The data network will consist of T-1 multiplexers and Telenet packet switches that will be installed at US Sprint points of presence. Both voice and data traffic will be carried on a fiber-optic backbone provided by US Sprint. The agreement is valued at $3.5 million annually. ▣

US Sprint launches VPN service to UK

continued from page 4

than competitors, he said. Both US Sprint and Mercury have all-digital, fiber-optic networks that, Burgess said, will provide higher quality service than other carriers' networks.

US Sprint's international private-line service will be priced 40% below AT&T's offering, according to Burgess.

Finally, US Sprint said last week it will offer a fractional T-1 service to domestic users beginning in September. Customers will be able to purchase individual channels within a T-1 circuit in increments of 56K bit/sec.

According to US Sprint officials, customers have expressed great interest in the service. "Many businesses spending at least $10,000 per month in telecommunications have applications below a T-1 level and above single-channel private-line bandwidths," said Richard Smith, US Sprint executive vice-president of national markets.

Pricing information is not yet available.

US Sprint's announcement that it will offer a fractional T-1 service follows a similar announcement from AT&T earlier this month. ▣

knows what the customer value of ISDN is going to be. If [MCI is] working on that problem, they're to be commended."

MCI officials did not deny that offering ISDN-equivalent services via nonstandard technology may mean that some users never implement ISDN.

"Customers will ask that hard question, 'Do I really need to go to ISDN to take advantage of some of the features that the network can offer today?' " Todd said. In some cases, customers may answer no, he said.

James Ellis, vice-president of telecommunications at New York Life Insurance Co., a beta-test site for MCI's Digital Reconfiguration Service, said his company is also interested in the MCI 800 Enhanced Services Package, which delivers the incoming calling numbers.

That feature would allow New York Life to set up a chargeback system for billing independent agents using the company's 800 number, Ellis said.

MCI said it has no intention of phasing out the equivalent services after introducing ISDN. Todd said the equivalent services will be enhanced as network technology permits. However, he stressed that MCI is working on a uniform pricing structure for features offered through both ISDN and ISDN-equivalent services. ▣

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9:30 A.M. — 4:30 P.M.

Tutorial-1
SNA Network Management
You will learn about the latest trends in SNA network management and products, with an emphasis on the information you need to exploit the capabilities of various SNA network management tools in managing your network. Instructor is L. David Passmore, Partner, Network Strategies, a practice of Ernst & Whinney. Mr. Passmore is a frequent lecturer at industry conferences and teaches 3-day seminars for Systems Technology Forum.

Tutorial-2
T1 Network Management
This tutorial will give you in-depth coverage of the latest strategies and equipment for building and operating T1 networks. Coverage will include diagnostics, testing, dynamic bandwidth positioning, auto reroute, PC or workstation displays, and the impact of T3, UNMA, NetView, OSI, LAN/WAN internetworking and carrier-based T1 networks. Instructor is Timothy G. Zerbiec, Principal and Vice President of Technology for Vertical Systems Group in Boston.

Tutorial-3
Integrated and Automated Network Management
Network management is now an important strategic issue for users and vendors. This tutorial will review the two major standards for inter-system transfer of management information: the SNA-based de facto standard from IBM and a vendor-independent standard based on OSI protocols. It will chart a course for future improvements towards integrated management systems and a new generation of expert system management applications. Instructor is James G. Herman, a Principal with Northeast Consulting Resources, Inc. and well known writer and lecturer on network management and planning issues.

Tutorial-4
LAN Management
This tutorial will take an in-depth look into the management of today's LANs. Topics will include design, implementation, operational management and the evolution of LANs. You will receive guidance in evaluating design alternatives, equipment acquisition decisions and useful techniques in LAN management. Instructor is David deS. Couch, Corporate Communications Manager, Spartan Stores. He is currently responsible for the design and implementation of the corporate communication network for Spartan's corporate offices and 500 member retail stores.

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WEDNESDAY, JUNE 21

8:00 — 10:00 A.M.
X.1 Industry News and Announcements
The latest networking product news in a panel session chaired by Gary Beach of *Network World.*

10:15 — 11:00 A.M.
X.2 Keynote Address
By Mark Teflian, Vice President for Technical Planning and System Engineering, Covia, a partnership of United Airlines, US Air, British Airway, KLM Royal Dutch Airways, Swiss Air and Alitalia.

11:15 A.M. — Noon
Sponsor Briefings
Save time and effort by learning current network management solutions from key industry players such as Data Switch Corp., Infotron, Northern Telecom, Inc., StrataCom, Inc. and Timeplex, Inc. These sessions will deliver maximum information in a minimum amount of time.

12:00 — 1:30 P.M.
Lunch
Excellent time to visit demonstration suites.

1:30 — 2:15 P.M.
2.1 Real Time Management
This session will provide a "how-to" approach for operating networks for real time processing.

2.2 Implementing the Standards — Progress Towards OSI
The standards community activists will bring you up-to-date on progress of making network management under OSI "real."

2:30 — 3:15 P.M.
Sponsor Briefings

3:30 — 4:15 P.M.
4.1 LAN Management
In the face of many different LAN standards and products, how will the LAN users "migrate" towards a standards-based universal solution?

4.2 The Next Five Years: Technology Forecast
The senior technical members of the OSI/Network Management Forum will present a formal technological forecast of hardware, software and carrier service developments in network management.

4:30 — 5:15 P.M.
Sponsor Briefings

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THURSDAY, JUNE 22

8:30 — 9:15 A.M.

6.1 IBM NetView PC Products

The current and expected capabilities of the IBM PC and PS/2 approach to network management will be reviewed and discussed.

6.2 Packet Network Management

This session will give you some approaches and solutions to the management problems of packet networks.

9:30 — 10:15 A.M.

Sponsor Briefings

10:30 — 11:15 A.M.

8.1 TCP/IP Network Management

This session compares Simple Network Management Protocol (SNMP) with other methods of network management and shows how it could evolve into an OSI approach in the future.

8.2 Expert Systems/AI-based Network Management

In this session you will learn how artificial intelligence-based systems offer users a "smart" package to manage the network management system.

11:30 A.M. — 12:15 P.M.

Sponsor Briefings

12:00 — 1:30 P.M.

Lunch

Another good opportunity to visit demonstration suites.

1:30 — 2:15 P.M.

10.1 Managing IBM Networks without NetView

This session will define mainstream approaches to managing IBM System Network Architecture (SNA) networks, and present case histories.

10.2 User Administration

Many user organizations find network management costs for hardware, people and administration an unplanned expense. How can the cost be justified? What mechanisms can be used to provide "hands-off" control of the network as a part of the basic architecture?

2:30 — 3:15 P.M.

Sponsor Briefings

3:30 — 4:15 P.M.

12.1 User Experience Panel

In a fitting program finale, actual case histories of successful network management implementation will be presented by the winners and runners-up for the *Network World* NMS Award.

Conference Presenters

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Dates: Tuesday, June 20 through Thursday, June 22, 1989

Location: The Swiss Grand Hotel, 323 East Wacker Drive, Chicago, IL.

Schedule:	All-Day Tutorials	Tuesday 9:30 A.M. - 4:30 P.M.
	Conference	Wednesday 8:00 A.M. - 5:15 P.M. Thursday 8:30 A.M. - 4:15 P.M.
	Demonstration Suites	Tuesday 4:30 P.M. - 6:30 P.M. Wednesday 10:00 A.M. - 6:00 P.M. Thursday 10:00 A.M. - 4:00 P.M.

Registration Fees:

Full Conference Registration:	$625 per person
One-Day Tutorial only:	$395 per person
Two-Day Conference only:	$395 per person

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Software provides ISDN-like features

continued from page 4

completing the transaction then receives the call and a screen of data regarding the customer.

While CallPath provides Integrated Services Digital Network-like features, it is based on proprietary protocols. Analysts said CallPath can only provide a fraction of the features available with PBX-to-host links that use ISDN standards.

"For the IBM environment, this might be a slight step forward," said Mary Johnston, a principal with Northeast Consulting Resources in Boston. "But in terms of how this positions the 9751 against its major competitors, I'm not particularly impressed."

Johnston said other vendors are delivering ISDN-compatible PBXs capable of supporting similar functions.

CallPath "doesn't prepare you for a smooth migration to ISDN because it doesn't use any of the ISDN protocols," she said.

Joaquin Gonzalez, a principal with Fairfax, Va.-based Network Strategies, a practice of Ernst & Whinney, said, "This [type of PBX-to-host link] is something everybody and his brother — at all line sizes — is looking at."

Slimmed down PhoneMail

Analysts were a little more positive about PhoneMail Release 4, which includes a smaller cabinet, uses less power and emits less heat than earlier models.

The new model supports as many as 20,000 mailboxes, up from the 8,000 on earlier models, and as much as 768 hours of digitized voice storage, up from the 480-hour limit of earlier models.

As many as eight 16-line PhoneMail Release 4 cabinets can be linked via an IBM Token-Ring Network. The Token-Ring Network supports transfer of messages and signaling information between the cabinets.

Users previously relied on the PBX to transmit messages and signaling information between PhoneMail cabinets. This approach required use of voice lines, reducing the number of lines available for incoming calls.

PhoneMail Release 4 also includes an enhancement to an existing networking option that enables users of up to 50 PhoneMail systems to exchange voice messages via dial-up or leased analog lines. The new Network Name Dialing feature lets a user on one system send a message to a user on another by entering the person's name on the telephone keypad instead of dialing the phone number.

Office Integration Feature

Another enhancement with this release is the Office Integration Feature, the ability to generate a voice message to notify users of IBM's Professional Office System (PROFS) electronic mail system that they have E-mail waiting. This complements an existing feature that sends a text message to a PROFS user's mailbox when a PhoneMail message is waiting.

CallPath 9750 costs $25,000. CallPath Host and CallPath Host link cost $81,000 or may be leased for $2,250 a month.

Scheduled to ship in June, a PhoneMail Release 4 model with four lines and a disk supporting 22 hours of storage is priced at $28,000. ◻

IBM releases latest AS/400 applications

By Jim Brown
New Products Editor

DALLAS — IBM last week announced applications from seven third-party vendors based on its AS/400 Telephony Application Services, which software developers can use to build programs bridging IBM Application System/400 (AS/400) minicomputers and IBM private branch exchanges.

Introduced at the International Communications Association's 42nd Annual Conference and Exhibition here, the AS/400 applications make it possible to generate management reports from call detail records uploaded from IBM switches and to dial telephone numbers from the screen of AS/400-attached terminals.

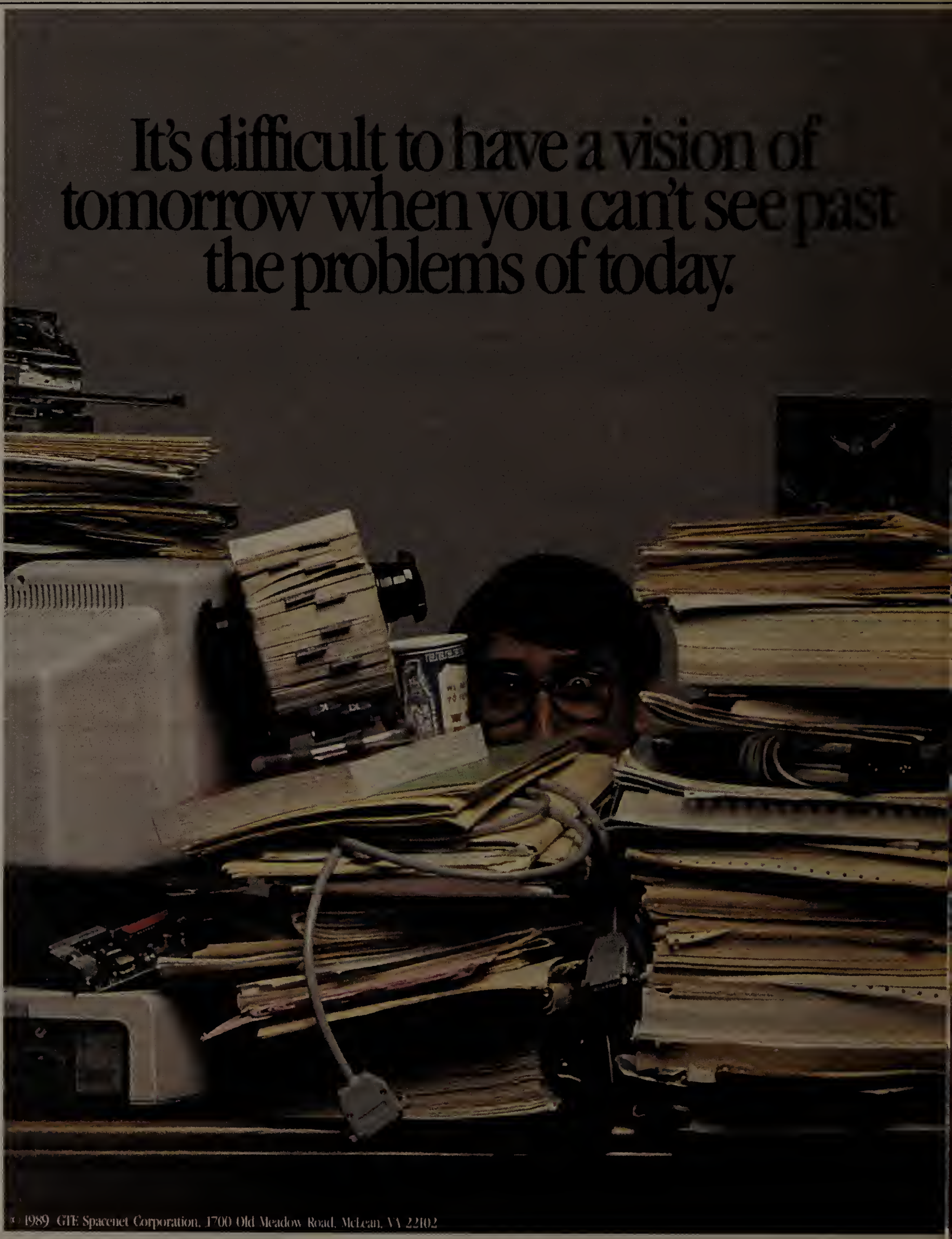
Applications based on the services that were unveiled last week are:

- Instor Corp. announced its Call Analyzer telemanagement software to enable users to retrieve 9751 or 9722 Redwood PBX call detail records and produce call-accounting reports.
- Five developers announced applications that enable users to dial numbers displayed on a terminal screen and to generate call detail reports.

They are Software 2000, Inc.'s Application Manager and Accounts Receivable bill-collection packages; Communicator Asystance Systems, Inc.'s Asystance telemarketing software; Information Management Assciates' Telemar telemarketing software; QuestComp, Inc.'s QuestLoan loan processing and QuestMark telemarketing software; and VanArsdale, Inc.'s Smartdial and Marketbase software.

- Lawson Associates, Inc. announced its Pinstripe Universe Environmental Software and Pinstripe Accounts Receivable software to let bill collectors dial numbers displayed on a terminal.

IBM said it is shipping a version of the software for the 9722 Redwood and will ship the 9751 PBX version in December. Pricing for the software ranges from $840 to $5,800. ◻


It's difficult to have a vision of tomorrow when you can't see past the problems of today.

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IBM overhauls 3174, broadens 3745 line

continued from page 1

up from the previous limit of 512.

The nine new 3174 models, like the former generation, are distinguished by the number of ports they have. The low-end 91R and 92R support four to eight 3270 ports; the mid-range 61R, 62R and 63R support up to 16 3270 ports and eight ASCII ports; and the high-end models, the 11L, 11R, 12R and 13R, support 32 3270 ports and 24 ASCII ports.

Models with similiar port capacity differ in the types of protocols and interfaces supported.

More memory

Although they have the same port capacity as the earlier generation, the new controllers are based on more powerful processors and support 2M bytes of memory, expandable to 6M bytes, according to Gregg Schulstad, product support manager at IBM. Older models came with 1M to 4M bytes of memory.

The added horsepower supports microcode that drives new connection options. The microcode, Configuration Support-B, is licensed internal code that combines the function of two previous versions of code, one of which supported asynchronous communications and one that supported Token-Ring Network interfaces.

With Configuration Support-B, a 3174 acting as a Token-Ring Network gateway can be channel-attached to a host and support as many as 250 network-attached physical units, up from the previous limit of 140.

Support-B also provides two new options for attaching to multiple hosts. The first, a new Concurrent Communications Adapter, which lets a 3174 link to as many as three hosts, is a catch-up feature for IBM, according to Leslie Lord, a senior analyst with International Data Corp. (IDC), a research firm in Framingham, Mass. IBM competitors Memorex Telex Corp. and AT&T have offered that feature in their controllers for years, Lord said.

The second host connectivity feature lets a 3174 on a Token-Ring Network communicate with as many as eight hosts, a function only IBM offers, Schulstad said.

Support-B also provides improved response time for customers that use 3174s on Token-Ring Networks to access remote hosts. Users can now configure IBM's Network Control Program (NCP) in a front-end processor to issue group polls. That eliminates the need for NCP to request data from the 3174 for each of its attached devices.

Future Support-B enhancements, due in June 1990, will provide functions such as Local Format Storage, through which CICS screen format panels will be stored on the 3174.

Eliminating the need to transmit panel data each time the user hits the enter key will also improve response time.

Prices for the 3174 models are the same as those for the models they replace, ranging from $3,855 for the 92R to $14,260 for the 11L.

Although 3174 microcode was provided as a standard feature on the old-generation 3174, Support-B software costs from $250 to $1,100. The new models will be available May 26, but Support-B Release 1 is not scheduled to ship until Sept. 29.

Analysts were generally impressed with the 3174 announcement. "The 3174 has now become the low-end communications controller," said Atul Kapoor, vice-president of Kaptronix, Inc., a consultancy in Haworth, N.J.

But their praise was tempered with disappointment at some features that are still missing, particularly support for PU Type 2.1, which would further enhance the controllers' networking capabilities. "I don't believe that this is truly the big plan that IBM has for its controller," IDC's Lord said.

New FEPs

Filling in its front-end processor line at the low end, IBM last week introduced IBM 3745 Models 130, 150 and 170. Each model can support fractional T-1 lines — T-1 service leased in 64K bit/sec increments or bundles — and is based on the same type of central control unit with 4M bytes of main storage.

Each model runs the same versions of NCP as the existing 210 and 410, but the new devices can only be upgraded from one to the other. They cannot be expanded to a Model 210 or 410.

The Model 130 supports four 4M or 16M bit/sec IBM Token-Ring Network interfaces, two T-1 lines and four host channel connections but no other types of communications lines.

The Model 150 supports 16 communications ports at speeds up to 256K bit/sec, two 4M or 16M bit/sec Token-Ring interfaces and one T-1 line. By contrast, IBM's existing low-end 3720 does not support T-1 lines but does support as many as 60 communications ports when configured with expansion units.

The largest of the new processors is the Model 170, which supports a maximum of 112 lines at speeds up to 256K bit/sec. It also supports two 4M or 16M bit/sec Token-Ring interfaces and two T-1 lines.

Analysts said the Model 150 could spell the end for the 3720 — which is typically used as a remote concentrator for small sites — although IBM said it will continue to sell the 3720.

"There's no reason why anyone should be buying 3720s anymore," Kapoor said. "The 150 will replace that as a remote concentrator and give you a faster, cheaper machine and T-1 support."

Prices for the new models are $20,000 for the Model 130, $29,500 for the Model 150 (which includes peripherals) and $25,000 for the Model 170. The models are slated to ship in August. ☑

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